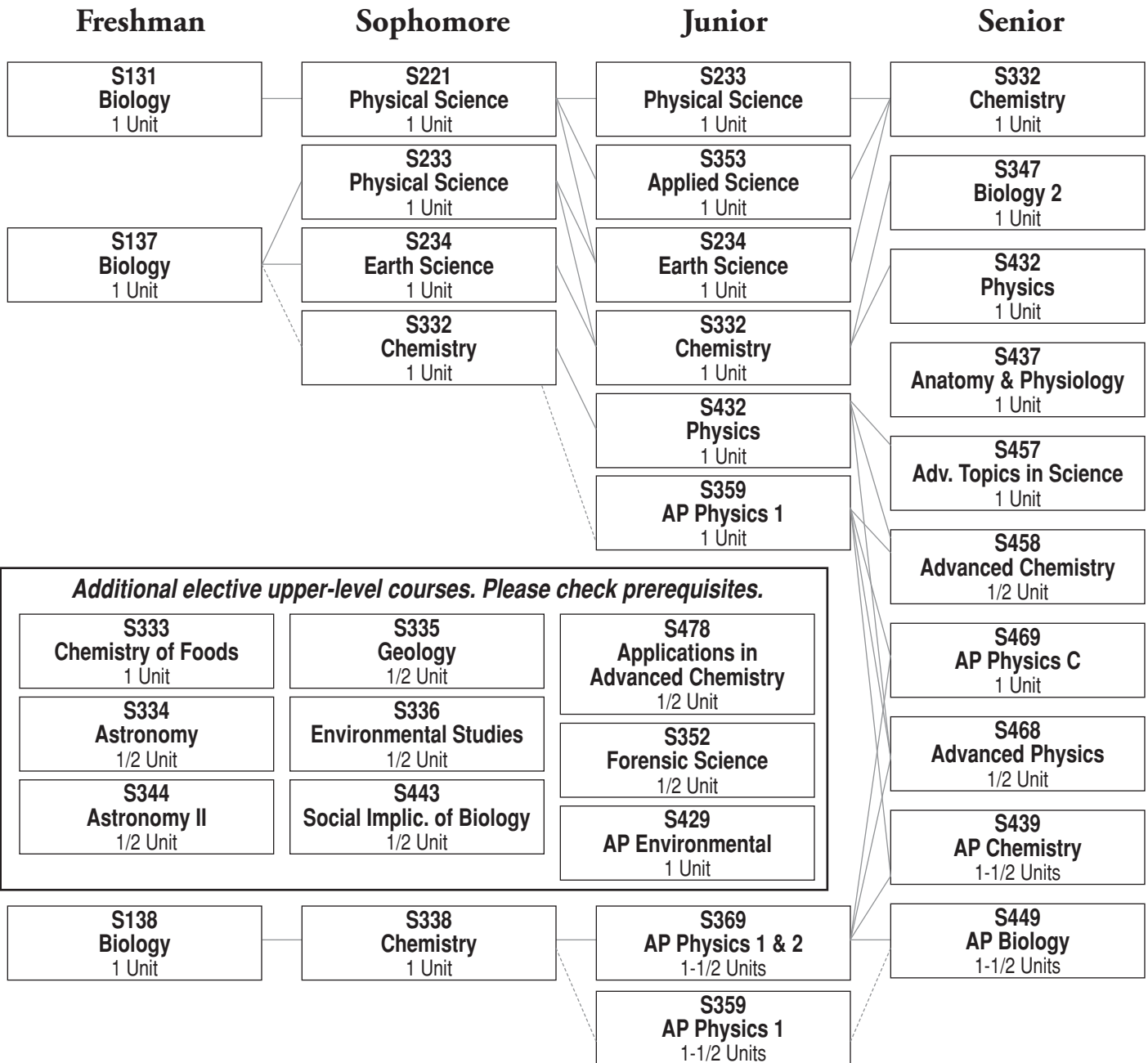




Science



Solid lines are mainstream sequences;
dashed lines are alternate selections usually
made through recommendations.

Our mission is two-fold. We are preparing some students for further study in science and engineering. We also accept the responsibility to educate all of tomorrow's citizens for a world that demands increasing familiarity with science and technology.

All students must complete two years of science, which shall consist of one year of biology and one year of a non-biology course. In addition, college-bound students should take chemistry and physics. Students are advised not to specialize in a particular science discipline until they have taken basic courses in several of the major fields.

S131 Biology **LEVEL: 1,2,3,4**

One year One unit

PREREQUISITE: Placement test and junior high teacher recommendation

This course is designed for student learning through the investigative approach. Areas studied in this laboratory course include the unifying concepts of the cell; the organism and its relationship to its environment; and reproduction, growth, and development of humans in their environment. (NCAA Core Course)

S137 Biology **LEVEL: 1,2,3,4**

One year One unit

PREREQUISITE: Placement test and junior high teacher recommendation

The investigative approach is used in this laboratory course. The unified cellular approach to biology has the following major themes: science as investigation and inquiry; the relationship of structure and function; diversity of type and unity of pattern; genetic continuity; and the relationship of organism and environment. (NCAA Core Course)

S138 Biology **LEVEL: 1,2,3,4**

One year One unit

PREREQUISITE: Placement test and junior high teacher recommendation

This is an accelerated course with content similar to S137 Biology; however, areas of study are more thoroughly investigated. A greater emphasis is placed on student-directed laboratory activities. The use of critical thinking and problem-solving skills is stressed. (NCAA Core Course)

Education is the key to unlock the golden door of freedom.
 – George Washington Carver
 Scientist, botanist, and inventor

S170 General Science **LEVEL: 1,2,3,4**

One year One unit

PREREQUISITE: Placement through staff conference recommendation

Basic divisions of science are covered including the fundamentals of electricity, weather, earth structure and dynamics, astronomy, chemistry, biology, plant science, and geography. Improving organizational skills and reading comprehension also are course goals.

S200 Physical Science **LEVEL: 1,2**

One year One unit

PREREQUISITE: Placement through staff conference recommendation

Students learn about the basic divisions of science including the fundamentals of geology, ecology, life processes, astronomy, weather, and electricity.

S221 Physical Science **LEVEL: 2,3,4**

One year One unit

PREREQUISITE: S131 Biology

This course is designed for student study of the principles of measurement, kinetics, mechanics, optics, electricity, magnetism, and chemistry. Classwork emphasizes the learning of science through laboratory experiences. (NCAA Core Course)

S233 Physical Science **LEVEL: 2,3,4**

One year One unit

PREREQUISITE: S137 Biology or department recommendation

This introductory laboratory course combines the study of physics and chemistry, focusing on theory as well as many practical aspects of both sciences. Topics may include heat, energy, mechanics, motion, waves, sound, classification of matter, chemical formulas, and chemical reactions. (NCAA Core Course)

S234 Earth Science **LEVEL: 2,3,4**

One year One unit

PREREQUISITE: S137 Biology or department recommendation

Lessons in this laboratory course are designed to survey earth processes. Topics studied include the changing earth, earth materials, earth motions, energy flow, meteorology, oceans, climatic patterns, mountain formation, the earth's history, and astronomy. (NCAA Core Course)

S270 Health Science **LEVEL: 2**

One year One unit

PREREQUISITE: Placement through staff conference recommendation

This course is designed to explore our physical, psychological, and emotional needs. Emphasis is given to learning activities which stress the development of healthy lifestyles that will enable students to achieve their full potential as human beings.



S300 Science/Health LEVEL: 1,2

(Palatine and Hoffman Estates High Schools Only)

One year One unit

PREREQUISITE: Placement through staff conference recommendation

Students learn the basics of good health and how to assume increased responsibility for their own health. Units of study include birth and early development, psychological systems, disease prevention, environmental health, family living, mental health, and responsible human relations.

S332 Chemistry LEVEL: 2,3,4

One year One unit

PREREQUISITE: S233 Physical Science (A,B,C) or S234 Earth Science (A,B,C) or sophomore students with department recommendation

Standard topics of the mole concept, periodicity, chemical energy, reaction rates, acids, and bases are introduced. The application of the concepts of chemistry to societal needs and problems is a very important aspect of the course. Heavy emphasis is placed on laboratory work. (NCAA Core Course)

S333 Chemistry of Foods LEVEL: 3,4

One unit (double class)

PREREQUISITE: 2 years of Science, and 1 year of Foods (H266 or H267), concurrent enrollment in H333 or department recommendation

Chemistry of Foods provides students the opportunity to participate in food preparation while learning the scientific basis of the chemical and biological processes involved in the culinary arts. Students completing this course will attain Food Safety Certification status by building on and applying to the concepts of food preparation and bacteriology. This course will provide guided practice and certification for the student who is choosing the profession while providing an overview of the restaurant industry for the student who is still expanding their horizons. Students will apply what they learn through participation in an in-house restaurant/catering component. The class meets two consecutive periods and is team taught by teachers from the Family and Consumer Sciences and Science departments. Students enrolled in the course will have a common lunch period to allow for flexibility on production days. (NCAA Core Course)

S334 Astronomy LEVEL: 3,4

One-half year One-half unit

PREREQUISITE: "C" or higher in S233 Physical Science or S234 Earth Science

Astronomy presents a study of both the solar and stellar systems. Topics studied include examination of the properties of the planets, the moon, the sun, comets, meteors, stars, and galaxies. Theories on the origin of the universe and development of the field of astronomy also are examined. (NCAA Core Course)

S335 Geology LEVEL: 3,4

One-half year One-half unit

PREREQUISITE: "C" or higher in S234 Earth Science

In this course, students build on knowledge learned in S234 Earth Science. They learn to analyze a specific landscape area,

looking for both constructive and destructive forces which have shaped the land. Students will reconstruct a geological history of an area. (NCAA Core Course)

S336 Environmental Studies LEVEL: 3,4

One-half year One-half unit

PREREQUISITE: S137 Biology or S138 Biology

This course explores environmental issues with a global perspective. Individual continents are studied to see the conflicts created when man manipulates natural cycles and processes. Examples of some topics covered in this course include: pollution, global warming, endangered species, overpopulation, land usage, and conservation. The course also educates students on environmental conservation projects being used within their own communities. (NCAA Core Course)

S338 Accelerated Chemistry LEVEL: 2,3,4

One year One unit

PREREQUISITE: "B" or higher in S138 Biology or department recommendation

This is an accelerated course with topics similar to S332 Chemistry, but covered in more depth with greater emphasis on mathematical concepts and their application to these topics. Laboratory work is emphasized. (NCAA Core Course)

S344 Astronomy 2 LEVEL: 3,4

One-half year One-half unit

PREREQUISITE: "C" or higher in S233 Physical Science or S234 Earth Science. C or higher in S334 Astronomy I.

In this course, students build on knowledge learned in S334 Astronomy. Topics studied include examination of the properties of the planets, moon, sun, comets, meteors, stars, and galaxies. (NCAA Core Course)

S347 Biology 2 LEVEL: 3,4

One year One unit

PREREQUISITE: "C" or higher in S137 Biology or S138 Biology

The course allows students to pursue a second year of biology. Major areas of study are cells and systems, ecological



relationships, genetics, and biotechnology. The course utilizes a laboratory approach and is taught at a level consistent with student abilities and course prerequisites. This is a course for college-bound students, but it is not an accelerated course. (NCAA Core Course)

S64702: Harper College B10101 Biology Survey, 3 credit hours

S352 Forensic Science **LEVEL: 3,4**

One semester One-half unit

PREREQUISITE: S432 or taking S432 concurrently with department approval

Forensic Science is a one semester course designed for students who have an interest in applying their background of science to the field of forensics. This lab-based course will focus on topics such as: crime scene photography, DNA, ballistics, blood splatter, and fingerprint analysis. (NCAA Core Course)

S353 Applied Science **LEVEL: 3,4**

One year One unit

PREREQUISITE: S221 or department recommendation

Applied Science is a topics-based science course exploring the connections between real world issues and classroom science. The emphasis will be on applying the processes of science, interpreting data and research and advancing scientific literacy to understand the role of science in our everyday lives. Forensics, roller coaster design, and sports equipment design are representative topics. Career connections are highlighted.

S359 AP Physics 1 **LEVEL: 3,4**

One year One unit

PREREQUISITE: "B" or higher in S332 or S338 Chemistry or department recommendation.

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 force, DC circuits, and mechanical waves and sound. Students are encouraged to take the AP Physics 1 exam in May. The class meets for one period per day and cannot be taken pass/fail. (NCAA Core Course - pending)

S369 Advanced Placement Physics 1 & 2 **LEVEL: 3,4**

One year One and one-half units

PREREQUISITE: "B" or higher in S338 Chemistry; "B" or higher in S332 Chemistry with department recommendation

Advanced Placement Physics allows students to pursue college-level study while in high school. The course places emphasis upon the principal topics covered in introductory college physics courses. The course covers mechanics; heat, fluids, kinetic theory and thermodynamics; electricity and magnetism; waves and optics; and atomic and nuclear physics. Students are encouraged to take both the Advanced Placement Physics 1 and Physics 2 exams in May. The class meets 1½ periods per day and cannot be taken pass/fail. (NCAA Core Course)

S432 Physics

LEVEL: 3,4

One year

One unit

PREREQUISITE: S332 or S338 Chemistry

This course emphasizes the following major topics: concepts of time, space and matter; motion and forces; optics and light; electricity and magnetism; and atomic physics. A heavy emphasis is placed on laboratory work. (NCAA Core Course)

S437 Anatomy and Physiology

LEVEL: 3,4

One year

One unit

PREREQUISITE: "C" or higher in S137 or S138 Biology and S332 or S338 Chemistry

This course focuses on the human body and its complexity. While this class will benefit students who are interested in the healthcare field, all students will have the opportunity to take part in exposure to anatomy and physiology. This will benefit careers such as biotechnology, pharmaceutical, and psychology. This class supports the STEM initiative which encourages high school students to venture into science and engineering professions. This course would earn one credit in science. (NCAA Core Course) *S63702: Harper College, B10135 Intro to Anatomy and Physiology, 4 credit hours*

S439 Advanced Placement Chemistry

LEVEL: 3,4

One year

One and one-half units

PREREQUISITE: "B" or higher in S369 Advanced Placement Physics; B or higher in S432 Physics with department recommendation

Advanced Placement Chemistry allows students to pursue college-level study while in high school. The course places emphasis upon the principal topics covered in introductory college chemistry courses. The topics covered include atomic theory, chemical bonding, equilibrium, gas laws, acid-base reactions, stoichiometry, kinetics, thermodynamics, and organic chemistry. A heavy emphasis is placed on laboratory work. Students are encouraged to take the Advanced Placement exam in May. The class meets 1½ periods per day and cannot be taken pass/fail. (NCAA Core Course)

S429 Advanced Placement Environmental Science

LEVEL: 3,4

One year

One unit

PREREQUISITE: "C" or higher in S137 or S138 Biology and "C" or higher in S234 Earth Science or S332 Chemistry or S338 Chemistry; or department approval

Advanced Placement Environmental Science allows students to pursue college-level study while still in high school. The course places emphasis upon the principal topics covered in introductory college environmental science courses. The topics covered include earth systems and resources, the living world, population, land and water use, energy resources and consumption, pollution and global change. Students are encouraged to take the Advanced Placement exam in May. (NCAA Core Course)

S443 Social Implications of Biology

One-half year

LEVEL: 3,4

One-half unit

PREREQUISITE: S137 Biology (A,B,C) or S138 Biology

This course presents many of the current advancements in biological science such as genetic engineering, environmental concerns, transplant technology, and methods of extending life. The social, legal, moral, and ethical challenges that they may present to man and society also are discussed. Emphasis is placed on group discussion, journal writing, simulations, and topic investigations.

S449 Advanced Placement Biology

One year

LEVEL: 3,4

One and one-half units

PREREQUISITE: "B" or higher in S369 Advanced Placement Physics; "B" or higher in S432 Physics with department recommendation

Advanced Placement Biology allows students to pursue college-level study while still in high school. The Advanced Placement course places emphasis upon the principal topics covered in college introductory biology courses. The course is divided into three major areas: molecules and cells, genetics and evolution, and organisms and populations. Students are encouraged to take the Advanced Placement exam in May. The class meets for 1½ periods per day and cannot be taken pass/fail. (NCAA Core Course)

S457 Advanced Topics in Science

(Palatine, Schaumburg and Hoffman Estates High Schools)

One year

LEVEL: 4

One unit

PREREQUISITE: "C" or higher in S137 Biology, S332 Chemistry and S432 Physics; or department recommendation

Advanced Topics in Science is a course designed to study the connections between the sciences. Students will learn specific concepts through the study of current issues. Sports technology, genetics, neurology, and chaos theory are representative units of study. Emphasis will be placed on experimental, research, and technology skills. (NCAA Core Course)

S458 Advanced Chemistry

One-half year

LEVEL: 4

One-half unit

PREREQUISITE: "B" or higher in S332 Chemistry or S338 Chemistry and S432 Physics or S369 Advanced Placement Physics; or department recommendation

Basic chemistry topics are reviewed and explored in greater depth than in S332 Chemistry and S338 Chemistry. Heavy emphasis is on laboratory work. (NCAA Core Course)

S468 Advanced Physics

One-half year

LEVEL: 4

One-half unit

PREREQUISITE: "B" or higher in S332 Chemistry or S338 Chemistry and S432 Physics or S369 Advanced Placement Physics; or department recommendation

Basic physics topics are reviewed and explored in greater depth than in S432 Physics and S369 AP Physics. A heavy emphasis is placed on laboratory work. (NCAA Core Course)

S469 Advanced Placement Physics Calculus C

One year

LEVEL: 3,4

One unit

PREREQUISITE: "B" or higher in S369 AP Physics 1 & 2 or S359 AP Physics 1 or S432 Physics; student also must have completed or be concurrently enrolled in an introductory calculus course

Advanced Placement Physics C allows students to pursue calculus-based college-level study while in high school. The course places emphasis upon the principal topics not covered in S432 or S369. This course also looks at the material covered in the students' introductory-level physics and uses Calculus to solve problems. The course emphasizes the following components: mechanics and electricity and magnetism. Students will study Newtonian Mechanics, Conservation Laws, including Energy and momentum, circular and angular motion, and a broad spectrum of Electricity and Magnetism topics. Students are encouraged to take both of the Advanced Placement Physics C exams in May, Mechanics and E and M. The class meets 1 period per day and cannot be taken pass/fail. (NCAA Core Course)

S478 Applications in Advanced Chemistry

One-half year

LEVEL: 4

One-half unit

PREREQUISITE: "B" or higher in S332 Chemistry or S338 Accelerated Chemistry and "B" or higher in S432 Physics

This lab-intensive course focuses on forensic chemistry, nanotechnology, and materials engineering with an emphasis on "real world" applications. Experiences from the course will include: problem solving within a crime scene, designing/testing prototypes of potential consumer products, fabrications of materials on the microscale, and investigating the ethical implications of developing technologies. This course can be taken independent of S458 Advanced Chemistry. (NCAA Core Course)

