



SCIENCE GRADES 9-12

TO OBTAIN a Regents diploma, the following science requirements must be met. A student must have three units of science, and two must be regents level science classes. The student must pass one science regents exam. For an advanced regents: a student needs a total of three units of science including two regents courses and two regents exams. Opportunities exist for earning college credit through the following courses: AP Chemistry, AP Biology, AP Physics, Sports Medicine, Intro to Biotechnology, and Intro to Education.

GRADE LEVEL EXPECTATIONS

In all science courses, students will use mathematical analysis, scientific inquiry, and engineering design to pose questions, seek answers, and develop solutions represent and organize observations (e.g., diagrams, tables, matrices, charts) and interpret the organized data to compare the predicted result in the hypothesis and the actual result; conclude whether there is support for the explanation on which the prediction was based understand and apply scientific concepts, principles, and theories about the physical setting and living environment, and recognize the historical development of ideas in science.

The Paul Stomper School of Science

In 1971 Paul Stomper graduated from Batavia High School. He has gone on to become a successful Physician and Author. Paul C. Stomper, M.D. grew up in Batavia, N.Y. Dr. Stomper, a musician and sports enthusiast, studied at the Berklee College of Music and graduated from Syracuse University and Upstate Medical College. He has served full-time on the faculties of Harvard Medical School at the Dana-Farber Cancer Institute and Massachusetts General Hospital Cancer Center (1982-1989) and Roswell Park Cancer Institute (1989-2004). Dr. Stomper has authored over one hundred papers in peer-reviewed medical journals and authored the book, Cancer Imaging Manual.

These are the requirements to become a member of the Dr. Paul Stomper School of Science and receive the science pin near the end of the senior year at the school awards ceremony or from the Counseling Center. Students must successfully complete a minimum of four science courses that includes the following coursework:

- Physical Setting Earth Science or Living Environment
- Physical Setting Chemistry
- Physical Setting Physics or AP Physics

And one of the following:

- AP Chemistry
- Sports Medicine
- AP Biology
- Natural Disasters
- Biotechnology
- AP Physics

The intent is to allow students some flexibility in course of study. Taking the most challenging classes your school has to offer can set you up for long term success in the future. Good luck as you pursue this designation, and work hard! Talk with your School Counselor or Science Teacher about your course selections to achieve this prestigious designation.

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(INSERT PICTURE IF YOU WISH)

TIPS FOR PARENTS

Teenagers benefit from a regular sleep schedule.

Set aside a designated homework space. Your student should do school work each night, even if work isn't due right away. Students can review notes taken during class or read a textbook.

Monitor and expect students to catch up on missing work if they've been absent. Do they have a classmate they can reach out to? Will they make an appointment with their teacher(s)? Have they made up any required lab minutes they may have missed?

- Dr Edith Ryan Scholarship of \$1000 may be awarded to a deserving member of the Dr. Stomper School of Science yearly. There is no application for the scholarship, it is selected by the BHS Science Department faculty.
- The Roswell Park Cancer Institute Fellowship is an internationally recognized opportunity for a BHS student in the summer between junior and senior year. The candidate must apply with their school counselor and should be a member of the Dr. Stomper School of Science. The cost is covered by Dr Stomper yearly.

LIVING ENVIRONMENT (REGENTS) 1 credit, 1 year The Living Environment course is also commonly known as Biology or Life Science. This introductory course follows the Living Environment New York State core guide. The areas of study include: similarities and differences among living organisms, homeostasis, genetics, reproduction and development, evolution, ecology, human impact on the ecosystem, scientific inquiry, and laboratory skills. The course meets 3 out of the 4 blocks. Students are required to complete 1200 minutes of laboratory and provide complete and accurate laboratory reports to demonstrate proficiency with the course content. All complete and accurate labs are due the first week of June.

EARTH SCIENCE (REGENTS) 1 credit, 1 year The Physical Setting/Regents Earth Science course of study is designed to encourage students to understand the processes of change in earth and space through first-hand observation and inference. Throughout the various units, including Rocks and Minerals, Earthquakes, Landscapes, Geological History, Meteorology and Astronomy, emphasis is placed on scientific inquiry and analysis of data relevant to the NYS Learning Standards. Students will be taught to formulate questions related to their experiences, and to use their acquired skills to investigate these questions. Throughout the year, timely environmental issues such as global warming and environmental pollution will be explored, with an emphasis on how we interact with the planet Earth, and our responsibility to understand and value our natural environment. Students are required to successfully complete all of the assigned laboratory reports to be eligible to take the Regents examination in June and to meet the State required 1200 minutes of laboratory time. Students are required to successfully complete all of the assigned laboratory reports to be eligible to take the Regents examination in June. The course meets 3 out of 4 blocks.

CHEMISTRY (REGENTS) 1 credit, 1 year Prerequisite: Successful completion of Living Environment as well as passing Regents Exams. This full year course meets 3 out of 4 blocks. We will be investigating matter and the changes it undergoes. Topics include: atomic concepts, periodic table, moles/stoichiometry, bonding, behavior of matter, redox chemistry, kinetics and equilibrium, solutions, organic chemistry, and nuclear chemistry. Students must complete 1200 laboratory minutes with satisfaction written lab reports in order to take the Regents exam in June.

Monitor your student's grades and attendance through the Schootool Parent Portal. Contact your student's teacher when you have questions or concerns.

Make sure students are organized. Whether they take notes online or in a notebook, they need a system.



Office of Curriculum and Instruction
Batavia City School District

PHYSICS (REGENTS) 1 credit, 1 year Prerequisite: Geometry, successful completion of 1 unit of Regents Science
Physics is the study of mechanics, energy, electricity and magnetism, wave phenomena, and modern physics. Hands on activities and applications will be stressed. Several engineering projects including egg drop, model rockets, and balsa wood bridge building highlight the laboratory portion of this course. Assignments involving writing and calculations will be assigned on a daily and weekly basis. Students should be able to use algebra to solve word problems. Students are required to successfully complete all of the assigned laboratory reports to be eligible to take the Regents examination in June. The course meets 3 out of 4 blocks. Students will be required to pay a ten dollar fee for online homework access.

SCIENCE OLYMPIAD 1/2 credit, 1/2 year Half year course meets every other day. This course will focus on project based learning through completion. Engineering contests in bridge building, energy transfer devices and model plane building will be typical of the types of contests conducted in class. The goal is to improve the understanding of scientific principles through application. This goal is accomplished through classroom activities, research and tournaments. Science Olympiad tournaments are rigorous academic competitions that consist of a series of events. These challenging and motivational events are well balanced between the various science disciplines of biology, earth science, chemistry, physics and technology. All events require teamwork, group planning and cooperation. The emphasis is on learning, participation, interaction, having fun and developing team spirit.

CONCEPTS IN CHEMISTRY 1/2 credit, 1/2 year Prerequisite: One science credit A major emphasis in this course is the development of hands-on laboratory skills. In addition to the traditional chemistry topics, consideration will be given to special areas such as chemistry in the community, environmental chemistry or everyday substances. Class meets for a full block every other day. Individual students will choose what they want to investigate and then —explore || that concept with as much depth or as much breadth as their interests determine. The course will be 100% student centered, student driven, inquiry based and project based. *To be offered on a rotating basis.

ENVIRONMENTAL SCIENCE 1 credit, 1 year Prerequisite: Completion of 1 unit of Living Environment This course is intended to provide students with an outdoor laboratory experience and may require students to participate in activities which include manual labor. The focus of the course is to assist students in identifying and describing the physical and biological elements in our ecosystem. Considerable attention is given to understanding the effects of natural phenomena and the impact of human activities on our ecosystem. Specific topics include: tree identification, winter ecology, ornithology, entomology, pond ecology, climate change, renewable resources, and marine science. Open to students in grades 11 and 12. This is a half

FORENSICS SCIENCE ½ credit, ½ year Prerequisites: The student must have completed two units of science and passed one Regents Exam. This course will introduce students to the procedures and analysis techniques used in collecting crime scene information. The areas covered will include securing and diagramming a crime scene and the collection and analysis of physical and biological evidence. Topics covered may include fingerprinting, hair and fiber analysis, ballistics, and blood splatter analysis. The final assessment will consist of a group project where students will need to apply their knowledge to construct a crime scene, including three pieces of evidence which can be collected and used to solve the crime. The course will be hands on, laboratory and project based with an emphasis placed on data presentation. Students will be required to work independently and in groups to collect and assemble data. This course meets for one block every other day for half a year.

INTRODUCTION TO EDUCATION 3 college credits/ 1 year Provides knowledge, understanding, and skills related to the interactions taking place in the classroom and within the school system from the perspective of the paraprofessional. Focuses on managing records and materials, attending to the needs of students, assisting in the development of instructional materials and experiences, assisting in instructional work, and current issues related to the operation of schools. Students complete a guided field observation under the supervision of a certified teacher. GCC EDF100 – 3 credits

APPLIED PHYSICS 1 credit, 1/2 year (potentially a semester course) Prerequisite: Two units of Science This course will focus on the applied area of physics. The course content may include but is not limited to topics in electricity, mechanics. It is expected that the student will participate in several group and/or individual projects. This hands-on course requires regular attendance as projects require extensive class time for successful completion. Open to students in grades 11 and 12. This is a half-year course that meets every day for a full block. *To be offered on a rotating basis

NATURAL DISASTERS 1 year, 1 credit Prerequisite: Completion of Earth Science Regents exam Examines the causes, effects, and options available to respond to and potentially mitigate the effects of natural disasters such as earthquakes, volcanic eruptions, tsunamis, landslides, severe weather, and floods. Differing impacts in developing and industrialized countries will be discussed. Up to 4 college credits. Meets every other day for a full year.

INTRODUCTION TO BIOTECHNOLOGY 1 credit, 1 year Prerequisite: Completion of two Science Regents course and the Living Environment Regents exam. A survey course in the field of biotechnology. Topics include current career opportunities; biotechnology practices; biotechnology's role in modern medicine, agriculture and DNA profiling; bioethics and the impact of biotechnology on society. Includes an introduction to documentation (notebooks), Standard Operating Procedure (SOP), Quality Assurance (QA), current Good Laboratory Practices (cGLP) and Federal Drug Administration (FDA) Regulations. This course meets for a full block every other day for a full year. A GCC college credit—3 credits.

SPORTS MEDICINE 1 credit, 1 year Prerequisite: Successful completion of Regents Earth Science AND Living Environment Regents. Successful completion is defined as an 80% or better cumulative average in EACH course. Additionally, Regents examination grades in both subjects will be reviewed. Those with the best academic standing in these core sciences and that meet all requirements will have first opportunity for admittance. This course will explore the many sport medicine careers available in the healthcare field today. This course has two main objectives: Biomedical Instruction Students will explore a multitude of physical fitness training modalities. From this instruction, students will test their current physical fitness levels and devise training plans to improve in strategic areas of need. Physiology of muscle contraction, integration of muscle action, and optimal muscle tension concepts are studied in detail. A very detailed nutrition unit is studied. Students will design a nutrition plan that is tailor made to their unique needs. Focused heavily on over the course of the year are the shoulder, knee, ankle, wrist, hand and forearm anatomy, osteology, mechanisms of injury, range of motion, palpation, diagnostic testing/various technologies, deciphering surgical reports, case studies and rehabilitation procedures.

The student can expect to leave this course with:

- Three college credits granted by Adelphi University. Students must be sophomore, junior or senior status. The college credits must be purchased from the university if the student wants college credit.
- CPR, AED, and first aid training
- Data on individual student fitness, VO2 Max, body fat composition
- Knowledge of proper training and lifting procedures
- Experience with creating rehabilitation plans for common joint injuries.

Sports Medicine is a highly activity based course. Outstanding attendance and participation are a must. This course meets every other day for a full block all school year.

AP BIOLOGY 1 credit, 1 year Prerequisite: Successful completion of Living Environment and successful completion or concurrent enrollment in Regents Chemistry. (Successful completion is defined as an 85% cumulative average overall in each science course AND above 85% in each Regents exam). This course is the equivalent to a full year college level freshman biology course for biology majors. This full year course will meet 3 out of 4 blocks. Students will have to attend college level lectures, participate in laboratory activities, and complete a considerable amount of outside reading. College credit for this course can be earned by scoring well on the AP examination in May. Credits are determined by the college at which students plan to enroll. A fee of approximately \$85 is required for each examination.

AP PHYSICS 1 1 credit, 1 year Prerequisites: Enrollment in or completion of Pre-calculus. Algebra-Based is the equivalent to a first semester college course in algebra-based physics. The course covers Newtonian mechanics (including rotational dynamics and angular momentum); work, energy, and power; mechanical waves and sound. It will also introduce electric circuits. The ability to develop and use physics knowledge by applying it to the practice of scientific inquiry and reasoning is at the heart of the course and exams. Students are required to take both the AP exam and the June Regents exam. This course meets 3 out of 4 blocks. A fee of approximately \$85 is required for each AP examination and is due in September.

AP PHYSICS 2 1 credit, 1 year Prerequisites: Completion of AP Physics 1 Algebra-Based is the equivalent to a second semester college course in algebra-based physics. This course covers fluid mechanics; thermodynamics; electricity and magnetism; optics; atomic and nuclear physics. The ability to develop and use physics knowledge by applying it to the practice of scientific inquiry and reasoning is at the heart of the course and exams. Students are required to take both the AP exam. This course meets 3 out of 4 blocks. A fee of approximately \$85 is required for each AP examination and is due in September. Students will be required to purchase online homework access at an approximate cost of ten (10) dollars.

AP CHEMISTRY 1 credit, 1 year Prerequisite: Successful completion of Regents Chemistry, Living Environment Regents. Successful completion is defined as an 85% cumulative average overall in each science course AND an 85% passing examination grade in each course. AP Chemistry should meet the objectives of a good college general chemistry course. Students in such a course would attain a depth of understanding of fundamentals and a reasonable competence in dealing with chemical problems. The course should contribute to the development of the students' abilities to think clearly and to express their ideas, orally and in writing, with clarity and logic. The college course in general chemistry differs qualitatively from the usual first secondary school course in chemistry with respect to the kind of textbook used, the topics covered, the emphasis is on chemical calculations and the mathematical formulation of principles, and the kind of laboratory work done by students. Quantitative differences appear in the number of topics treated, the time spent on the course by students, and the nature and the variety of experiments done in the laboratory. A fee of approximately \$90 is required for each AP exam. Students will be required to purchase online homework at approximately \$10.50.

SCIENCE AIS This course is designed to support students who need extra and individual help in order to be successful on the New York State Regents exam in Science. Students are scheduled into this course based on previous performance on state assessment exams.

LIVING ENVIRONMENT—X (Extended) 1 credit, 1/2 year The Living Environment course is also commonly known as Biology or Life Science. This introductory course follows the new Living Environment New York State core guide. The areas of study include: similarities and differences among living organisms, homeostasis, genetics, reproduction and development, evolution, ecology, human impact on the ecosystem, scientific inquiry, and laboratory skills. Students are required to successfully complete all the assigned laboratory reports to be eligible to take the Regents examination in January. The course meets 1 block, 4 days a week.

