SCIENCE DEPARTMENT

Inspiring the Next Generation of Scientists and Engineers.

Welcome

Welcome to the Science Department, a realm where education transforms into a captivating journey. Beyond memorization, we empower students to explore science through diverse approaches, unlocking their full potential.

Our focus is twofold: equipping students with essential learning techniques and honing critical thinking skills. Through active, student-centered learning, we nurture the ability to gather, analyze, and articulate information – vital skills for tomorrow's problem solvers.

In our classes, students decipher natural phenomena, create models, and devise solutions to real-world issues. Guided by scientific inquiry, they master data handling. Collaborative projects and community partnerships bridge classroom learning with practical experiences.

Join us in cultivating curious minds, adept thinkers, and future leaders. Welcome to an immersive learning adventure at the Science Department

Next York State Science Learning Standards

The New York State Science Learning Standards (NYSSLS) have been adapted from the Next Generation Science Standards (NGSS) and other guiding documents grounded in the most current research in science and scientific learning. The standards reflect the importance of every student's engagement with natural scientific phenomena using a three dimensional approach to learning. Students are engaged in science through the Science and Engineering Practices, or what scientists do, the Disciplinary Core Ideas, what we know and Crosscutting concepts, how we think.

Science education will involve less rote memorization of facts and terminology and will focus more on learning terminology when needed while developing explanations supported by evidence based arguments and reasoning. Systems thinking and modeling will be used to explain phenomena rather than the learning of ideas disconnected from questions about phenomena. Rather than teachers providing information to the whole class, students will conduct investigations, solve problems and engage in discussions with the teacher's guidance.

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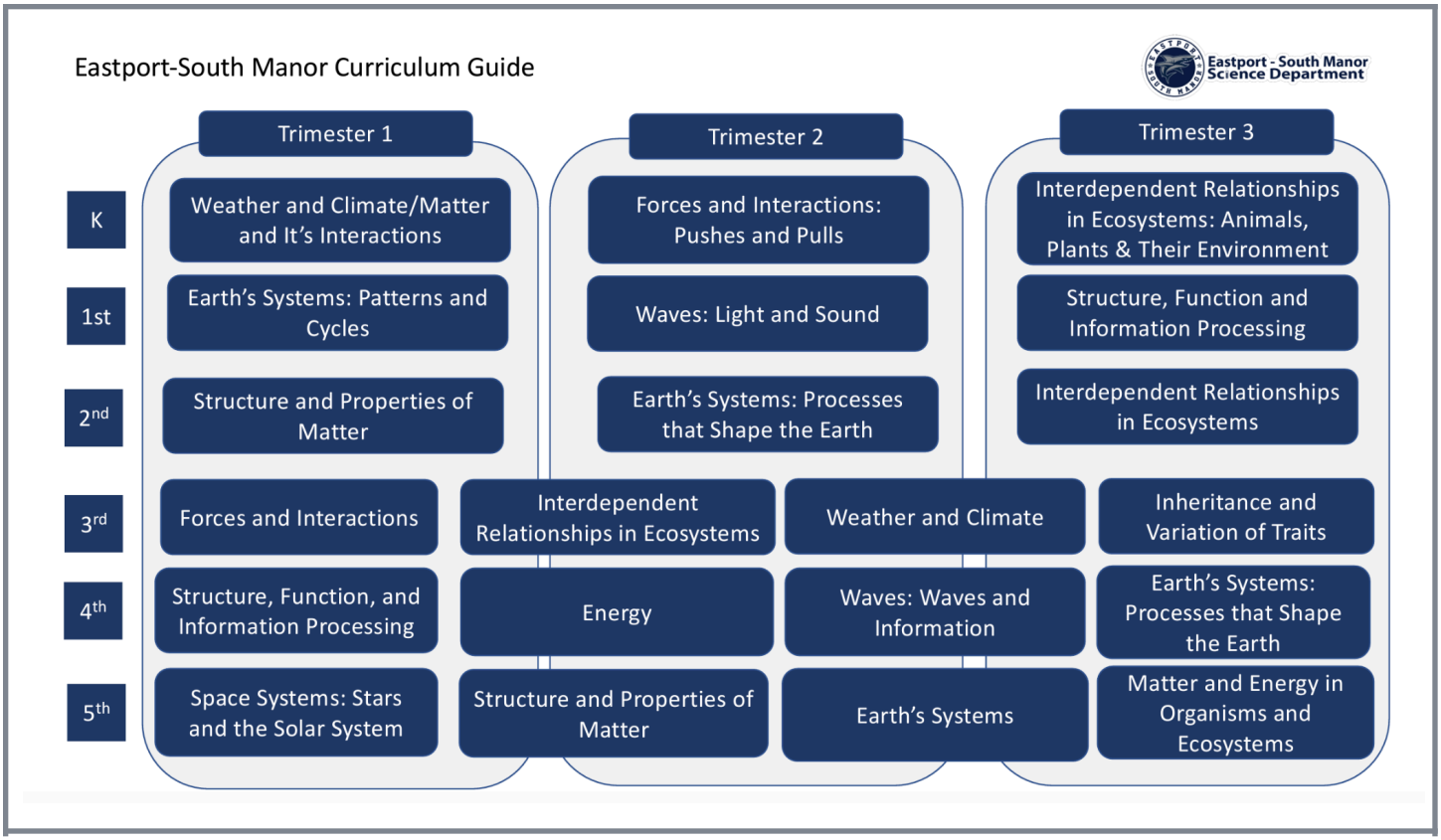
ELEMENTARY CONTENT OVERVIEW

Overview

Our youngest learners explore science using SCIENCE 21 developed at Putnam/Northern Westchester BOCES Curriculum & Instructional Services. SCIENCE 21 is an inquiry-based elementary school science program, developed "by teachers for teachers," that includes comprehensive curriculum guides, materials kits, and staff development services. As an inquiry-based program, students study the natural world and construct meaning and explanations based upon evidence that they derive from their activities. Throughout SCIENCE 21 there are several big ideas and unifying themes that occur. One of these themes is "Student as Scientist." Beginning in Kindergarten and continuing through the grades, students approach science as a process of inquiry and investigation. They will develop tools and procedures to investigate their world.



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Content Overview	
Kindergarten	
Grade 1	Grade 4
Grade 2	Grade 5
Grade 3	Grade 6

INSTRUCTIONAL RESOURCES

Next Generation Reading and Writing Standards	National Geographic Kids
Three Dimensional Learning Explained	NASA Climate Kids
The Wonder of Science	

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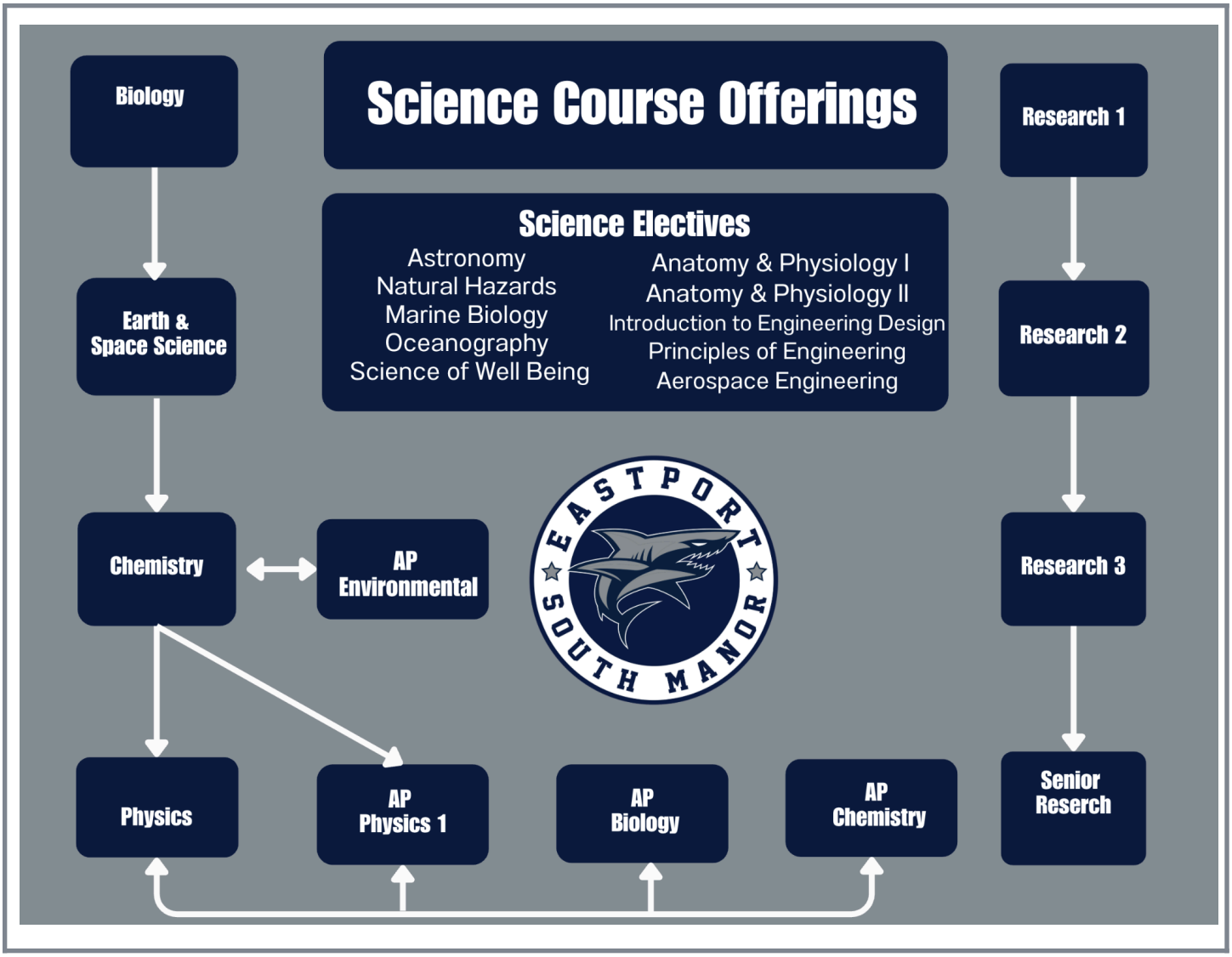
SECONDARY CURRICULUM OVERVIEW



Content Overview	
Grade 7 Science	Physical Science: Chemistry
Grade 8 Science	Physical Science: Physics
Life Science Biology	Advanced Placement
Earth and Space Sciences	Science Research
Science Electives	

SECONDARY COURSE OVERVIEW

Grade 7 Science

The Physical Science Course introduces students to essential concepts in the realm of physical science and the natural world while cultivating a sense of curiosity, critical thinking, and hands-on exploration. Aligned with the NYSSLS framework, the course places a strong emphasis on nurturing science and engineering practices, grasping crosscutting concepts, and understanding disciplinary core ideas. Through a series of engaging science and engineering practices, students learn how to ask questions, conduct investigations, analyze data, and construct explanations. Crosscutting concepts are woven into the curriculum, allowing students to identify patterns, explore cause and effect relationships, and appreciate the interconnectedness of various scientific domains. Disciplinary core ideas within the physical science domains, such as matter and its interactions, ecosystems, energy, and waves, form the backbone of the course content. Ultimately, the physical science course aims to equip students with a solid comprehension of fundamental concepts, foster their scientific inquiry skills, and encourage them to view the world through the lens of physical science, nurturing critical thinking and collaboration along the way.

Grade 8 Science

This course offers middle-grade students a comprehensive exploration of fundamental life science concepts, aligned with the New York State Science Standards (NYSSLS). The curriculum emphasizes the integration of scientific practices, crosscutting concepts, and disciplinary core ideas. Students delve into cell structure and function, genetic principles, biodiversity, ecosystems, human body systems, and environmental science. The course fosters an understanding of the interdependence of living organisms and their environments, integrating hands-on activities, collaborative projects, and scientific inquiry. Assessment methods include formative and summative assessments, laboratory investigations, and projects aligned with NGSS performance expectations. The goal is to develop scientific reasoning skills, critical thinking, and a deep appreciation for the interconnectedness of life on Earth.

Regents Life Science: Biology

This course is based upon the New York State Living Environment Next Generation Learning Standards. Students will investigate the living world through lab experiences, exploration, and inquiry. The interactions of the cells, organs, and organ systems of humans will be studied, as well as the impact of humans on the surrounding environment. Students will need to complete a minimum of 1200 laboratory minutes and 3 required State labs in order to be eligible to take the Regents exam.

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Regents Earth and Space Sciences

This course is based upon the New York State Science Learning Standards. Earth & Space Science is a branch of science that incorporates knowledge of our planet, and its position in space. Students will explore Earth's composition, structure, processes, and history; its atmosphere, freshwater, and oceans; and its environment in space. Course topics include an exploration of the major cycles that affect every aspect of life, including weather, climate, air movement, plate tectonics, volcanic eruptions, geology, Earth's environment, sustainability, and energy resources. Throughout the course, students will engage in hands-on laboratory activities and investigations to help them develop scientific inquiry and data analysis skills. Successful completion of the course will include 1,200 minutes of completed laboratory activities including three required state laboratories and will end with a Regents Exam.

Regents Physical Science: Chemistry

This NYSSLS-aligned Chemistry course provides an in-depth exploration of the principles governing matter and its interactions. Students will investigate atomic structure, chemical bonding, reactions, stoichiometry, acids/bases, the periodic table, and the behavior of gasses and solutions. Emphasis is placed on hands-on, inquiry-based learning through laboratory experiments, data analysis, and real-world applications. Students will need to complete a minimum of 1200 laboratory minutes and three required state labs in order to be eligible for the Regents Exam. This class meets daily with a laboratory period on alternating days.

Regents Physical Science: Physics

NYSSLS Physics offers a dynamic introduction to the fundamental principles of physics, aligned with the New York State Science Learning Standards (NYSSLS) and emphasizing hands-on, inquiry-based learning. Key topics include kinematics, dynamics, energy, wave behavior, electricity, magnetism, and modern physics concepts. Students will engage in laboratory investigations, collaborative projects, and real-world problem-solving, building skills in data collection, analysis, and critical thinking. Students will need to complete a minimum of 1200 laboratory minutes and three required state labs in order to be eligible for the Regents Exam. This class meets daily with a laboratory period on alternating days.

Science Electives

- Astronomy
- Science of Well Being
- Anatomy & Physiology
- Oceanography
- Natural Hazards
- Marine
- Project Lead the Way - Introduction to Engineering Design
- PLTW - Principles of Engineering
- PLTW - Aerospace Engineering

Advanced Placement

- AP Biology
- AP Environmental
- AP Chemistry
- AP Physics 1

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Science Research

- Introduction to Science Research
- Introduction to Research Methods 1
- Intermediate Research Methods 2
- Senior Research Methods

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