DOBBS FERRY MIDDLE SCHOOL
Dobbs Ferry, New York 10522

COURSE OUTLINE

SUBJECT: PHYSICAL SCIENCE **GRADE:** 6
Curriculum reflects NYSSLS and MYP Learning Criterion

Anticipated student outcomes:
By June of the school year, students in this class should be able to…

The Nature of Science
- Make qualitative and quantitative observations. Make inferences based on those observations.
- Integrate the steps of the scientific method in various classroom investigations.
- Measure the length, mass and volume of regular and irregular shaped objects using the appropriate lab instruments and convert within the metric system.
- Successfully design investigations to answer questions posed by instructors and students.
- Correctly set up and successfully graph varying data sets to model information visually.

Structure and Properties of Matter
- Develop models to describe the atomic composition of simple molecules and extended structures
- Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.
- Develop a model that predicts and describes changes in particle motion, temperature, and phase (state) of a substance when thermal energy is added or removed
- Use evidence to illustrate that density is a property that can be used to identify samples of matter
- Plan and conduct an investigation to demonstrate that mixtures are combinations of substances.

Chemical Reactions
- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.
- Develop and use a model to describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.
- Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy during a chemical and/or physical process.

Forces and Interactions

- Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects
- Plan and conduct an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object
- Ask questions about data to determine the factors that affect the strength of electric and magnetic forces
- Conduct an investigation and evaluate the experimental design to provide evidence that fields exist between objects exerting forces on each other even though the objects are not in contact.

Energy

- Construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.
- Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.
- Construct, use, and present an argument to support the claim that when work is done on or by a system, the energy of the system changes as energy is transferred to or from the system.
- Make observations to provide evidence that energy can be transferred by electric currents.
- Reflect upon the way Renewable and Non Renewable resources are used in the world.

Waves and Electromagnetic Radiation

- Develop a model and use mathematical representations to describe waves that includes frequency, wavelength, and how the amplitude of a wave is related to the energy in a wave.
- Develop and use a model to describe how waves are reflected, absorbed, or transmitted through various materials.

Materials required or used:

1 Composition Notebook
1 2 Pocket Folder

Criteria for grading:

Students will be graded using the averaging system. Students' grades will reflect their class participation, quizzes, homework, labs, projects and tests.
The course also engages the four IB Middle Years Program (MYP) learning and assessment Criteria.
Criterion A –Knowing & Understanding – through classroom presentations, demonstrations and evaluations
Criterions B and C – Inquiring & Designing and Processing - Evaluating by means of hands-on lab activities
Criterion D – Reflecting on the Impacts of Science through student-created presentations, projects, and reflective pieces.

Opportunities for Enrichment: Approved sites for Article Reviews

www.timeforkids.com

www.sciencenewsforkids.org

www.nytimes.com

https://phet.colorado.edu/_m/

Outline developed by: The Science Department *Date: Spring 2025*