THE PHYSICAL SETTING: EARTH SCIENCE
The Manhattan School @ Beacon School
Principal: Marta Barnett

Instructor: Mr. Tahir **Email: mtahir2@schools.nyc.gov** **Course Title: Earth Science**

Course Syllabus

Earth Science is the study of our planet, the processes occurring on it, and its position in space. It is a laboratory and activity-oriented course and as an interdisciplinary field includes: Geology – the study of the solid Earth, Meteorology – the study of Earth's atmosphere, Hydrology and Oceanography – the study of water in the Earth system, and Astronomy – the study of the planet Earth in space. Other areas such as Environmental Science, Geophysics, and Earth's history are also included.

The reasons for teaching Earth Science are numerous: it offers experience in a diverse range of interrelated scientific disciplines, it is closely related to the students' natural surroundings, and it offers the students subject matter which has direct application to their lives and the world around them. There are many opportunities to collect data, hypothesize, experiment and draw conclusions, both within school and outside environments. We experience the dynamic Earth every moment of our lives and because of this the study of Earth Science is very real and relevant to our day to day lives.

The Regents Earth Science course has several general goals. They are:

1. To understand the fundamental concepts underlying Earth Science
2. To learn how these concepts were found, why they were chosen, and how they are applied in today's world
3. To develop methods of problem solving that will allow one to apply logical and creative thinking to new and unfamiliar situations
4. To alter beliefs and opinions after careful study of new evidence
5. To develop methods to apply one's skills, attitudes, and knowledge to experimentally test ideas

Perhaps the most important outcome of the study of Earth Science is the ability and willingness to change beliefs and opinions after careful study of new evidence. The method of critical thinking and problem solving learned in this course of study will remain long after the details of the subject are forgotten.

COURSE OUTLINE

First Term - September through January			
Unit 1	**Unit 2**	**Unit 3**	**Unit 4**
Chemistry • Elements • Matter, compounds, mixtures • Nature of earth science • Basic atomic structure	**Geology-Rocks and Minerals** • Minerals • Igneous rocks • Metamorphic rocks • Sedimentary rocks (intro - may be taught with weathering) • Mining & natural resources	**Geology-Earth** • Structure of earth & properties • Convection cycles & density • Crust and lithosphere • Evidence of movement • Plate Tectonics • Earthquakes and volcanoes -tsunamis	**Oceanography** • Water cycle • Hydrology (Stream mechanics, ground water) • Weathering agents • Warm currents • Erosion • Deposition • Soils (porosity, permeability) • Real world applications -agriculture, mudslides

Second Term - February through June			
Unit 5	**Unit 6**	**Unit 7**	
Meteorology • Weather instruments • Climate • Station models • Electromagnetic Spectrum • Weather variables • Heat transfer • Water cycle • Factors that affect climate (altitude, latitude) - El Nino	**Archaeology** • Fossils • Index Fossils • Geologic Time line • Mass Extinction and NY state fossils • Radioactive Dating	**Astronomy** • Phases of the moon • Geocentric vs Heliocentric models • Solar system and Milky Way Galaxy • eccentricity • Tides • Celestial observations • HR diagram • Expanding Galaxy	**Review** • First term topics • Regents exam prep

COURSE REQUIREMENTS

The basic requirements of this course are as follows:

- Seven core units (shown above)
- A minimum of 1200 lab minutes.

THE REGENTS EXAMINATION

The Regents examination in The Physical Setting: Earth Science is a comprehensive, statewide exam comprised of the following:
Part A – content-based, multiple choice questions
Part B – content and skill-based, multiple choice and short, constructed response questions
Part C – content and application-based, extended, constructed response questions
Part D – lab performance exam – an assessment of laboratory skills
The lab performance exam, Part D, is given prior to the written exam (Parts A, B, and C). In this assessment of laboratory skills, the students rotate through three stations and perform tasks at each and write responses to related questions.

COURSE MATERIALS

The following materials will be needed in class daily:

A pocket folder for handouts, tests, homework
A simple, inexpensive calculator (scientific calculator is not necessary)
Metric ruler
Pens, pencils, erasers (several of each)
Earth Science Reference Table (Student will receive this in class)
Earth Science Review Book (Student will receive this in class)

The following materials may be needed at school and will be provided accordingly:

Textbook, Earth Science Review Book, Graph paper, Stapler

CLASSROOM POLICIES AND PROCEDURES

You are expected to be in class, on time, every day. In the event of absence, it is your responsibility to find out what you have missed. *You are responsible for all homework, tests, and labs.* **Food, snacks, hats and cellphones are Prohibited; this policy is non-negotiable unless you have a medical requirement.**

Grades: Grades will be calculated according to the following formula:

Exams……..25%
Classwork……35%
Projects…….……...20%
Homework…….…….20%

Classwork:

Assignments are comprised of Do Now, Cooperative Learning, Aloha Misconceptions, Peer evaluation, Self Evaluation and Exit Ticket. Each question is worth one point as per Regents. One point is **deducted** for not engaging with a question or peer evaluation. In **Aloha Misconception** part of the assignment; an incorrect answer is underlined. You are supposed to explain why is it wrong or why your answer choice is the correct one. **Failure** in explaining the answer warrants half a point, 0.5 out of 1.

Many assignments have projects built in as I believe in Project based learning, as one gets to conduct research and analysis of the concepts in a thorough manner which helps in learning using scaffolds. If a rubric is assigned, choose the project of your choice and follow the rubric accordingly. Each project is **12 points**, and points are awarded based on the quality of the work done.

Tests: There will be at least one comprehensive exam per unit; for some units two. Tests are announced well in advance of the test date. If you are absent on a test date, you can expect to take the test the day you return to school.

Homework: Homework is given almost daily and is generally due the next day. Homework which is poorly done or contains numerous blanks will receive no credit. If you are absent, you will be required to make up missed homework. Again, it is YOUR responsibility. Homework is due the day after you return from an absence. You will have Friday, SGI (Small Group Instruction) to makeup assignments unless you attend After School Tutoring to complete missing work. Of course, the sooner you submit the homework, the better.

Homework may be:
Reading and answering questions in the textbook and/assignments.
Lab or fieldwork write-up or Paper and pencil lab
Reaction paper for newspaper article
Viewing a television documentary and answering related questions
Project or research paper

Lab Reports: Attendance at lab, as well as completion of written reports, is MANDATORY for Regents science. If you miss lab, it is your responsibility to arrange to make it up, and makeup must occur within two weeks of your return. Lab reports are due at the completion of the laboratory session. They receive a pass/fail grade or a letter grade. A lab manual is assigned to each student, and an initial is given by the educator on completion of lab.

Preparation and Cooperation: You are expected to come to class, on time, prepared with the materials you need and with any work which is due. Your folder and the Reference Table **SHOULD** be with you each day we have class, this is **Non-negotiable.** You will be better able to contribute to discussions and ask relevant questions if you have done the required work and have been attentive in class.

Lateness: It is extremely important to be on time for each class as work begins immediately. You must be in your seat, beginning your work when the bell rings. There will be repercussions for students who are not in class and seated on time, and the class work grade will be affected.

Heading: A heading is required on all submitted work. It must have the following format:

Name (first and last) Date
Class number

Suggestions for Improving Study Habits:

- Students need to do more than just "go over" their notes or the chapter. They must **read** for understanding.
- Students must be familiar with the content, vocabulary, definitions and formulas and must make use of the reference tables.
- Students are encouraged to use note cards on which to highlight key points and vocabulary words.
- Being attentive in class and doing all work assigned is crucial to success. Also take lab seriously as content knowledge and process skills are acquired through the lab experience.
- Homework is important in reinforcing the work done in class or preparing for work to be done. Homework must be done on time to derive the most benefit.

Electronic devices: Electronic devices (cell phones, CD players, beepers, IPODS, etc.) may not be used anywhere in school, at any time. If they are seen, used, or heard, they will be confiscated and held by the dean or assistant principal for a predetermined period of time.

LAB POLICY

- Students will observe all safety rules and use appropriate safety equipment as directed. Unsafe behavior may result in a reduced grade, no credit at all, or exclusion from lab.
- Students will stay seated during labs. Questions will be answered one student at a time after raising hand.
- Lab groups are not negotiable. You will be assigned lab partners.
- Lab reports are due at the end of the lab period.
- Lab folders containing graded labs will be stored at school.
- Attendance at all lab classes is crucial as the time allotted for after-school lab make-up is limited.
- The New York State Education Department mandates the successful completion of a minimum of 1200 minutes of lab time in order to sit for the Regents exam. A successful lab is a passing lab.
- In this Regent's class every student is expected to complete a minimum of 1200 minutes of satisfactory laboratory time in order to be admitted into the Regent's Examination. Failure to complete the required 1200 minutes will result in the student being barred from taking the Regent' Examination. Every student is expected to qualify and take the Exam.

Earth Science Assignments Timeline

Unit 0: Chemistry	**Earth Science** **Unit 1: Geology** **Minerals-1**	**Unit 1: Geology** **Rocks-2**	**Unit 1: Geology** **Weathering-3**
-Day 1 activity -Reference table Scavenger Hunt -Naming-0 -Atomic Structure-1 -Elements and Compounds-2	Mineral-0 Mineral-1 Minerals-2 Analysis-3 Bohr-4 Subatomic-5 Excited State-6 Isotopes-7 Abundance-8 Ions-9	Sedimentary-1 Sedimentary-2 Igneous-1 Igneous-2 Igneous-3 (Quiz) Volcano-4 Meta-1 Meta-2	Deposition-1 Weathering-2 Sediments-3
Unit 1: Geology **Plate Tectonics-4**	**Unit 2: Oceanology**	**Unit 3: Meteorology**	**Unit 4: Archaeology**
Plate-5 Drift-6 Earthquake-1 Epicenter-2 Crust-1 Crust-2 Crust-3 Geology Lab exam	Vocabulary-0 Ocean-1 Porosity-2 Water-3	Heat-0 Atmosphere-1 Cliamte-2 Spectrum-3 Water Cycle-4 Variables-5 Weather Station-6	Fossil-0.5 Halflife-1 Timeline-2 Index-3 Index-4

Unit 5: Astronomy
Moon -1 Early Models-2 Bigbang-3 Solar System-4 Stars-4.5 Stars-5 Astro-6 Expanding-7 Eccentricity-8

Some activities performed outside the lab periods may count toward the lab requirement. In other words, labs are not solely performed in the assigned lab periods. They may be done in class, as fieldwork, projects, or sometimes as homework assignments.

Please Note: As per the New York State Education Department regulations, students who do not have the mandated 1200 minutes of satisfactory lab time cannot take the Regents exam.

We're looking forward to an exciting, enriching school year and we welcome you to Regents Earth Science at P35M.

PLEASE RETURN THIS PORTION TO YOUR TEACHER

I have read the attached course outline, goals, expectations, and evaluation criteria for REGENTS EARTH SCIENCE and have discussed these requirements and responsibilities with my parents/guardians.

In addition, I understand and accept the minimum laboratory requirement, 1200 successful lab minutes with accepted reports. If I do not meet these requirements, I realize I will not be allowed to take the New York State Regents Exam in Earth Science.

Student Signature_____ Date_____ Class_____

Parent/Guardian Signature_____ Email:

Phone Number: