Physical Science

Mr. Roth, Room 407 (sroth@osd.wednet.edu)

Overview:

The objectives for this class are to; develop an understanding of concepts and scientific practices included in the study of: energy and motion, electricity and magnetism, chemistry, wave mechanics, sound and light, and astronomy. Emphasis will be placed on scientific process skills and experimental techniques. Students will learn through a combination of self-study, small group, cooperative learning and class discussions. Active participation in all class endeavors is essential.

Expectations:

1. **Be Ready** - Come to class on time, ready to work, prepared with your science notebook, paper, and pen/pencil.
2. **Be Responsible** - The only one in charge of your behaviors and learning is YOU! Follow safety guidelines, complete assignments, turn them in on time, and promote learning for yourself and others.
3. **Be Respectful** - Use common courtesy toward yourself, your classmates, and Mr. Roth. Promote a safe and comfortable atmosphere (listen, No put-downs, empathetic, etc.)
4. **No Food or Drink** - On lab days! Gum is OK if Mr. Roth can't see or hear it.
5. **Be Involved** - Work with partners, take chances, and ask questions! We learn more from our mistakes

Policies:

1. **Grading** - Will be computed on a % of the points earned in each category for the semester.

100- 93% = A	**Category**	**% Weighted**
92-90% = A-	Tests/Quizzes	30
89-87% = B+	Labs/Activities	30
86-83% = B	Daily Work	30
82-80% = B-	Projects/Research	10
79-77% = C+		
76-73% = C	Extra Credit	(can raise UP to 10%)
72-70% = C-		
69-67% = D+		
66-58% = D		
57-0% = F		

To receive FULL CREDIT on assignments:

1. Use 8.5 inch by 11 inch ruled, 3 hole paper
2. Assignment Title (top & Centered)
3. Include a correct heading: name, date, period, teacher (upper right corner)
4. Use pencil, pen (blue/black) or typed
5. Turn in ON TIME!
6. Source of Information, if not your own, clearly identified and labeled.

Late Work - accepted until each Unit Test, however the penalty is up to half credit.

Quizzes - usually unannounced, however notebooks may be used. Retakes may be completed within one week.

Tests - occur at the end of each unit and relate concepts learned to new situations. Test scores may be raised up to **10%** through test **CORRECTIONS**, or **RETAKES** can receive up to **75%**. Both are offered outside of class time (before/after school) within one week of the original test. Semester Final Exams are comprehensive and cover material from the entire semester. You may receive an **EXEMPTION** on the final exam **IF**: 1. ALL assignments are turned in, 2. A's (93% and above) on ALL Tests, **AND** 3. 97% or higher overall grade prior to the final exam. You must prove these using your **COMPLETED** semester scoresheet on the day of your final exam.

Skyward Grading - Updated grades will be posted periodically on Skyward. Updated score sheets in the front of your notebook will allow you to keep track of your grades at all times. These may be submitted for extra credit at each of the 6 week grading periods. In the event of teacher error you need to be able to **SHOW** your graded paper to get credit. Often times missing papers can be found in the no name return box.

Projects - Some units may have a project, introduced in class and worked on mostly at home. Point totals depend on the work required. More information will follow with each project.

Extra Credit - Students may raise their semester grade **UP TO** 10%. All extra credit must be submitted **at least one week before the end of the semester**. Some examples: science current events, science community service, science TV show summaries/reactions (even cartoons),visiting scientific sites with reactions/documents, displays for the glass case or classroom, a reflective notebook journal, or anything that extends science beyond the classroom!

2. **Notebook** - Students are **REQUIRED** to keep an organized 3 ring binder of all materials. I suggest organizing general information in the front, followed by sections for each unit arranged in chronological order. It is the student's responsibility to collect graded papers from the return baskets. There will be a notebook exam each semester with questions such as:

On the syllabus, what is #5 on Mr. Roth's Policies? answer: absences.

(If you did not have this paper, answering the question would be virtually impossible.)

3. **Science Materials** –

REQUIRED: 3 ring binder, **RED PEN** for corrections, pen/pencil, notebook paper, textbook (at home).
SUGGESTED: colored pencils, dividers, scientific calculator, highlighters, etc.

4. **Tardies** - You are counted tardy if:
1) you are not inside the classroom when the bell rings
2) you do not make your way to your seat immediately **OR**
3) you are talking after the bell.

School policy will be followed regarding tardies (2 equal one unexcused absence.)

5. **Absences** - Some in-class activities (demonstrations/discussions) cannot be reproduced. If you know you will be absent, arrange ahead of time for assignments. It is **YOUR** responsibility to make up assignments, before returning ask lab partners /study buddies what was missed and get papers needed before/after class/school. If you miss class due to a school related function you are responsible to obtain the work **PRIOR** to being absent. It is **YOUR** responsibility to keep track of your attendance to clear unexcused absences. School policy will be followed.

6. Cheating - Unfortunately this section needs to be addressed in guidelines :-(. Remember you **EARN** your grades. Keep in mind that I often encourage working together on assignments and allow notes on quizzes. **If you are unsure, it's your responsibility to ask BEFORE beginning work.** Any student found attempting to take credit for another's work, or providing other students with his/her work, will be dealt with per OHS policies.

1st offense: 5 days in study hall and parent contract with a 0 grade on the assignment
2nd offense: removal form the course with an F grade for the semester.

7. Personal Electronic Devices – The level of electronic use in the classroom varies.

Level 1 = No Electronics, Level 2 = Classroom Activities or Level 3 = Teacher Sets Limitations.

All personal electronic devices are prohibited during class (unless instructed to use during the lesson). This includes telephones, music players, electronic games, etc. Violations will follow school policy.

8. Please **DON'T DISTURB** any projects, equipment, supplies etc. unless cleared by the teacher.

Try not to be intimidated by all the rules. I enjoy teaching science to students with great attitudes and efforts. We will create a healthy learning environment where we feel comfortable to express ourselves, make mistakes, and learn from them. That is how science works!!

My best advice to you is to plan some structured study time (15-30 minutes) for science each evening. This may include reading, completing written work, or reorganizing notes/notebooks.

Equation for SUCCESS = Be **PRESENT** everyday

+ **ATTEMPT** all concepts

+ work **COOPERATIVELY** with partners

Guidelines for Science Laboratory Write-ups

The write-ups include three main parts, the PRELAB, DATA and CONCLUSION. Write-ups should be formatted so the section headings are easy to find. Each student is required to prepare a lab write-up for every experiment, unless instructed otherwise.

PRELAB: This part is required **BEFORE** beginning the experiment. It should include:

Heading: (top right)
Name:
Date:
Period:
Instructor(s):
Lab Station #:
Partner(s):

Lab Title: (top center of paper)

Purpose: The purpose is usually a question experimentally. What is the problem you are trying to solve?

Hypothesis: A **testable educated guess** about the purpose based on prior knowledge or experiences. A prediction with reasoning. (Includes a What and a WHY.) Do this **BEFORE** you conduct the lab.

Materials: List all equipment, materials, chemicals, etc. needed for the lab.(include size, amount, etc.)

Procedures: List all experimental procedures ("what to do") step-by-step. **NUMBER THE STEPS!** It is often helpful to sketch the set-up using pictures. Write these so that anyone could pick up your lab and perform the steps. The procedure must include the following:

- **Controlled Variables** - kept constant throughout the investigation.
- **Independent (Manipulated) Variable** - changed, experimental, with 3 or more conditions.
- **Dependent (Responding) Variable** - measured, focus on ONE!
- **Experimental Control -** an unchanged investigative situation to serve as a basis for comparison.

Steps taken to carry out the investigation and how to use the materials
How often and when data is to be **RECORDED**.

Safety: *List all safety rules to be followed in lab.*

DATA: This part is required **DURING** the experiment. It should include:

- An organization of the measured (dependent) variables throughout the time of the investigation.
- Include **results of tests** and **questions answered** in the form of **data tables, observations, etc.**
- Make sure data is properly identified with the appropriate **labels** and **units**.
- **Learning experiences**: Any errors during the lab need to be included in this section.
- **Data Analysis**: this includes calculations, graphs, or any work using your data.

CONCLUSION: This part is required **AFTER** conducting the experiment. It should include:
A relation directly to your stated purpose for doing the experiment and contains the following 3 components:

1. **A Conclusive Statement**: identify weather or not your hypothesis was supported (or refuted).
2. **Data Evidence**: include at least 3 pieces of evidence (data) supporting/refuting your hypothesis.
3. **Scientific Reasoning**: this should explain the trend in the data.

ANALYSIS: This part is required **AFTER** conducting the experiment. It should include:
Answers in complete sentences to assigned questions concerning the experiment's results

SPECULATIONS: This part is required **AFTER** conducting the experiment. It should include:

1. Any errors or mishaps you experienced and how they **MIGHT** have affected your results.
2. The changes/improvements that you would include **IF** you were to repeat the experiment.

****** Not all of the explorations (labs) will fit this format neatly, and you may have to improvise. Some sections of the lab write up may not be included. Pay attention to specific instructions for each lab!

SCIENCE LABORATORY SAFETY GUIDELINES

DOs:

* Keep **lab station** & aisles clean and free of clutter (bags on hooks (or desk) & chairs in).
* **Report accidents** (spills, breakage) **immediately**.
* Familiarize yourself with **safety symbols** used in the class.
* Prepare an outline of materials, procedures, and specific safety guidelines **before** the lab. (**PRELAB**)
* Wear proper **safety gear** identified for each experiment.
* Handle all **chemicals** with caution.
* Use **open flames** (Bunsen burners) with caution.
* Check all **glassware** for cracks or defects before using.
* **Wash hands** carefully after handling chemicals.
* Learn the location of **safety equipment**: (We check the following off TOGETHER in class!)

___ first aid kit	___ fumehood	utility shutoffs	exits & routes
___ fire extinguisher	___ eye wash	___ gas	___ fire
___ emergency call	___ safety shower	___ water	___ earthquake
		___ electricity	___ lock down

DON'Ts:

* Never engage in "horseplay."
* Never leave an open flame unattended.
* Never taste anything in the lab.
* Never conduct unauthorized experiments.
* Never take food or drink to a lab station.
* Never wear open toed shoes (sandals) during lab.
* Never sit on lab counters during experiments

IN CASE OF ACCIDENTS:

* Notify the teacher **IMMEDIATELY**.
* Flush spills with plenty of water. (unless dry powder, or instructed otherwise)
* Clean up broken glassware completely and place in the marked containers (beside the fumehood)

Student/Parent Agreement

We have read the course and safety guidelines for Mr. Roth's science class and understand class policies regarding rules, grading, make-up work, etc. I have been given a copy of the course and safety guidelines, and understand that I am responsible for the information they contain, and that I am to keep it in the front of my notebook, which I am to bring to class daily. I agree to follow these guidelines at all times, and understand that failure to do so may result in disciplinary action or removal from the course.

Student Name: (print) _____ Period: _____.

Student Signature:_____ Date signed: _____.

Parent/Guardian Signature: _____ Date signed: _____.

Dear Parent/Guardian,

Science is the most diverse course taken at OHS and for many it is the most difficult. In addition to reading and writing about course concepts, they apply math skills, learn how to use new measuring tools, gather data and prepare graphs, learn research and presentation skills, and design and build individual projects at several points throughout the year. It is a dynamic course where everything a student learns applies to new content. Although the course is divided into units, the material itself is connected on many levels and it is vital for each student to remember and apply their learning.

The best support you can provide is insuring your child is at school everyday and completing all assignments. This is a lab-based course and each lab requires equipment that is only available the day of the lab. If a student misses a lab, s/he can get the data from a partner and complete the lab report, but s/he misses the opportunity to conduct the experiment on his/her own.

We want your child to succeed in this course! Please see "9 Ways Students Succeed" handout for more tips on successful habits. This is an active and engaging course and I enjoy teaching it very much. If you know of any specific challenges (physical, mental, and/or behavioral) your child has, or can provide me with any information that will aid me in assisting your child, please take the time to inform me by sending a note or e-mail. Please contact me if you have any questions or concerns throughout this year.

Sincerely,
Steve Roth