

# **Rocky Mountain Lutheran High School**

## **SCIENCE 12: PHYSICS & HONORS PHYSICS COURSE SYLLABUS**

**INSTRUCTOR: MISS PRESSER**

**EMAIL: [kpresser@rmlhs.org](mailto:kpresser@rmlhs.org)**

### **Course Description**

This two-semester course is an introductory study of relationships between matter and energy. The course is designed to provide students with a solid foundation with which they may proceed to take a more advanced level of physics. Students will study physical experiences in laboratory activities and evaluate their findings using mathematics as a descriptive tool. This course is designed to build a conceptual understanding of physical laws and natural processes. The course will cover, in depth, a broad range of physics topics, similar to those typically found in a first-year college physics course. Topics studied include mechanics, Newtonian laws of motion, momentum, waves, sound, light, heat, and electricity.

### **Honors Physics Students**

Honors students will be expected to demonstrate academic leadership as well as be required to delve deeper into the subject areas outlined in the syllabus throughout the year. As an honors student, the goals for physics have additional honors requirements. These requirements include a research portion for the 4 major projects (mouse trap car, bridge building, physics in action, and egg drop), independent investigation into a specific honors topic once a quarter, and higher level of problems in assignments and on exams. In addition, the class will be designed to allow for a greater amount of self-expression and thus will require a greater amount of self-regulation. As an honors course, you will assume high expectations from me and will be given appropriately high responsibilities. Not every assignment will have an added honors requirement, but on average the honors student can expect an additional honors requirement once a week.

Upon successful completion of this course, honors students will receive an additional  $1/3^{\text{rd}}$  point applied to the students GPA.

After 3 late assignments or 3 unexcused tardies in a semester an honors student will be removed from Honors Physics and placed in regular Physics.

During the first 3 weeks of a semester, students have the option of adding or dropping honors.

In order to enroll in honors physics, the student and their parent must complete the RMLHS honors student contract found below.

### **Course Materials**

- Textbook
- 3-Ring Binder
- Paper
- Pencil
- Graph paper
- Scientific calculator with trig functions (Graphing calculators are recommended, but not required.)
- Notebook (optional)

## Course Requirements and Expectations

Students in this class are expected to

- participate in all classroom activities.
- complete all homework assignments.
- respect the opinions of others.
- come to class prepared, every day, on time.
- follow the rules and procedures outlined in this syllabus.

### Grading Procedures

Overall grades will follow the schools grading scale.

Grades will be compiled using the following percentages.

Assignments/Labs	50%
Tests	30%
Classroom Participation	10%
Final Exam	10%

### Classroom Policies

**LATE WORK: I WILL accept late work!** Let me emphasize that it is your responsibility for completing the work. Credit for unexcused late work will be reduced to a maximum of 50%. Credit for excused late work will not be reduced but must be submitted by the date determined by the teacher.

**TARDINESS:** Being late to class not only means you miss out on classroom activities, but that your disruption and distraction causes others to miss out as well. If you are late to a class and are unexcused please wait outside the door until I allow you to come in. Continual tardiness will result in a reduction of your grade.

**CAN I GO...?:** To your locker? To the bathroom? To get a drink? Generally the answer is **no**. Take care of your personal needs on your own time and come to class prepared. However, situations do arise when it becomes necessary for you to leave the room. If you need to leave, please wait for an appropriate time to ask.

**EXTRA CREDIT:** There will be a few occasions, extra credit assignments will be offered. Extra credit will not be counted toward your grade until the end of the quarter.

**COMMUNICATION:** There is no reason for you to ever wonder what your grade is. Please feel free to ask for your grade at any time. I will give you your cumulative grade after each chapter exam, so hopefully there will be no surprises.

**CLASS PARTICIPATION:** Active participation during class is expected and can be demonstrated by asking questions of and answering questions from the teacher. Students are also expected to participate fully in all group projects, such as labs.

**DISCIPLINE:** By now you have been in school for enough years to understand what behavior is expected of you. Disciplined behavior is expected of you at all times. The bottom line of any set of rules and regulations for classroom behavior is *respect*. Demonstrate respect for the people and property in the classroom, and we will have a terrific year.

**EXTRA HELP:** If you find that you need additional help from the instructor, “My door is always open.” Please ask me anything. I will be in the office every morning by 8:00 am. I am willing to meet with you at any time that is available.

**CLASS NOTEBOOKS:** Each student must take detailed notes during class, especially during laboratory investigations. All notes must be kept in a notebook, which will be handed in every Friday to be reviewed for completeness and accuracy by the teacher.

**ARTICLE REVIEWS:** You will complete 4 article reviews, one due at each mid-quarter. The article must pertain to a current issue in science. This article must be approved by the instructor and will run 1-2 pages in length, single-spaced, and in 12 pt Times New Roman.

**LABS:** Students will be required to complete a minimum of 1 lab each week. Each lab is worth a minimum of 10 points. Students are expected to take thorough notes about the procedure and observations, plus record all collected data. **All lab safety rules must be strictly observed.**

## Course Content

### *Mechanics*

- Speed, velocity, and acceleration
- Motion in a straight line
- Two-dimensional motion
- Newton’s laws
- Gravity and motion
- Momentum
- Energy and power
- Periodic motion
- Mechanical properties of solids, liquids, and gases

### *Heat*

- Heat and work
- The laws of thermodynamics
- Phase changes
- Heat transfer
- Kinetic theory

### *Sound*

- Sound waves
- The speed of sound

- Sound propagation in various materials

### *Light*

- Light waves
- The speed of light
- The electromagnetic spectrum
- Refraction and reflection
- Lenses, prisms, and mirrors
- Interference and diffraction
- Interactions between light and matter

### *Electricity and magnetism*

- Electrical charges and Coulomb’s law
- Electrical potential and electric fields
- Electrical properties of materials
- Electrical currents
- Electrical circuits
- Magnetic fields
- Magnetic properties of materials
- Electromagnetic induction

## A Final Note: Plagiarism

Plagiarism is defined as taking the words or ideas of others and claiming them as your own. It is an act of theft, dishonesty, and cheating. It is important that you pay careful attention to your writing and always cite your sources.

Knowingly copying or using the academic work of another and presenting it as your own will result in consequences. The assignment will be given a zero and the offense will be reported to the administration.

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As a student in Miss Presser's class, I have read and understand the syllabus for Physics 12. I agree to abide by these rules and procedures, and to ask questions when I don't understand.

Signed,

\_\_\_\_\_ Dated: \_\_\_\_\_

Printed Student Name

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As a parent, I have also read and understand the policies and expectations set forth in this syllabus for Physics 12. I will support these policies by encouraging my student to follow them.

Signed,

\_\_\_\_\_ Dated: \_\_\_\_\_

Parent Email Address

Best Contact Phone Number

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