Rockets and Roller Coasters

Course Overview:
Rockets and Roller Coasters brings science knowledge and exciting hands-on engineering together. Students will apply several physics concepts by designing and constructing their own structures (model water powered rockets and card stock roller coasters), calculating data and other activities.

Course Description:
Want to know what it takes to be a rocket scientist or a roller coaster engineer? During this class, students will discover engineering challenges while building their own rockets and roller coasters. This class will help students learn about scientific problem solving and the exploration of several science themes. It is designed to be a hands-on learning experience that challenges students to solve problems and think critically and creatively. What more can you ask for while learning about the physics of flight, forces and motion?

Course Goals and Objectives

1. Goal: Roller Coaster Design and Building
   Objective: Investigate science concepts that involve roller coasters such as: speed, acceleration, gravity, friction and kinetic/potential energy
   Objective: Analyze data to calculate average speed and acceleration, graphing results, determine how slope affects speed and acceleration
   Objective: Investigate and build a successful roller coaster that demonstrates all parts of acceleration

2. Goal: Water Powered Rocket Design and Building
   Objective: Investigate science concepts that involve model rockets such as: Newtonian physics, flight, thrust, speed, velocity, acceleration and stability.
   Objective: Analyze data that will allow students to determine speed of the rocket, distance the rocket travels, and hang-time of the rocket.
   Objective: Design and build a rocket that will achieve maximum horizontal flight. (Team competition.)

Course Materials:
Students are expected to bring the following to class on a daily basis:
1. One notebook (composition or spiral)
2. Writing utensils (red pen, pencil, blue/black pen).
3. Ruler (metric recommended).
5. Spirit of teamwork and competition.
Course Grading
There will be no letter grades assigned in this course. In place of letter grades, a developmental level will be assigned based upon the stated course objectives throughout the program. Students will receive a final assessment of: beginning, emerging, developing, capable, experienced, or exceptional.

Classroom Behavior:
The student is expected to demonstrate mature, polite behavior and extend courtesy to everyone at all times:
1. Actively participate, and respectful verbal and nonverbal interaction with all opinions must be shown at all times.
2. Since differing views will be expressed, the teacher and the student(s) will mutually maintain a safe environment for courteous dialogue.
3. Respect is to be shown for all CSUN property.
4. No food or beverages will be permitted in the classroom. Snacks must be eaten outside between the designated breaks.
5. Warnings for behavior / discipline problems will be given once. Any further problems will result in a phone call to the parent(s) or guardian(s) and possible dismissal from the program.

SAEP Electronics Policy

Cell phones, music players and headphones are not permitted to be used during class hours.
   a. Please put your cell phone on silent (NOT vibrate).
   b. No texting is allowed during class.

You will be given one verbal warning if the above is not followed. Should a second warning be necessary, your cell phone, music player and/or headphones will be confiscated and held by the teacher until after class. If a third time occurs, your cell phone, music player and/or headphones will be confiscated and held in the SAEP office and MUST BE PICKED UP BY A PARENT.
Rockets and Roller Coasters

After reading through the syllabus, please sign and date and have your student return it to class. The signature constitutes your commitment to the class as we partner to make the next five weeks a life-long educational experience for your student.

**Student/ Parent Agreement:**
Please bring this signed and dated *Rockets and Roller Coasters* syllabus agreement to class tomorrow.

If you do not understand any portion of this syllabus, or if you have any questions regarding this class, please do not hesitate to email the teacher.

We have read and understand the contents of this syllabus.

Student name ______________________________________________________

Student signature____________________________________________________

Date__________________

Parent/Guardian name _______________________________________________

Parent/Guardian signature_____________________________________________

Date_________________

Phone _____________________________________________________________

E-mail_____________________________________________________________