Science Olympiad

Course Overview:
Science Olympiad brings science knowledge and competition together in an exhilarating way. The student will apply his/her knowledge of science by designing and constructing structures and vehicles, solving mystery problems, calculating navigation, and other activities in a group setting for the purpose of team competition. The student will develop competitive teamwork skills by exploring science concepts, problem solving, and building science-related projects that demonstrate the concepts of motion, heat, gravity, mass, air resistance, engineering and design, and more.

Course Description:
The class is designed for the student to explore and apply scientific knowledge and concepts for team competition. Projects involve scientific problem solving, real-life applications of science concepts, and research and exploration of science concepts. The class will also help students learn how to problem solve as a scientific team in order to complete tasks efficiently and successfully. Competitions include (but are not limited to): building and analyzing roller coasters; egg drops; bridge building and testing; designing and testing rockets; constructing and using a solar cooker, and more.

Course Goals and Objectives
1. Goal: Egg Drop Competition
   Objective: Investigate the effects of gravity on objects.
   Objective: Analyze data that will allow students to determine the rates of freefall.
   Objective: Investigate and build a casing that will protect an egg from breaking and will sustain the highest drop. (Team Competition)

2. Goal: Spaghetti Bridge Building/Busting Competition
   Objective: Investigate five types of bridges and how forces such as gravity, tension, and compression effect each one.
   Objective: Design and build the lightest bridge capable of supporting a given maximum load using the given material. (Team Competition)

3. Goal: Roller Coaster Competition
   Objective: Investigate science concepts that involve roller coasters such as: speed, acceleration, gravity, friction, and kinetic/potential energy.
   Objective: Analyze data to calculate the average speed and acceleration, graphing results, and determine how slope affects speed and acceleration.
   Objective: Investigate build and test a successful roller coaster that demonstrates all parts of acceleration (Team Competition.)
4. **Goal:** **Rocket Competition**  
**Objective:** Investigate Newton’s laws of motion.  
**Objective:** Analyze data that will allow students to predict how launch angle, fin placement, and nose cone length can alter trajectories.  
**Objective:** Build a rocket and design the conditions required to maximize horizontal flight. (Team Competition)

5. **Goal:** **Solar Cooker Competition**  
**Objective:** Investigate the concept of using the sun as a source of clean energy  
**Objective:** Investigate the principles of reflection, insulation, absorption, and the greenhouse effect in order to incorporate them into your solar cooker.  
**Objective:** Design and build a solar cooker that will be able to cook a delicious desert. (Team Competition)

**Course Materials:**  
Students are expected to bring the following to class on a daily basis:  
1. One (1) spiral-bound college-rule notebook.  
2. Writing utensils (red pen, pencil, blue/black pen).  
3. Ruler (metric recommended).  
5. Spirit of teamwork and competition.

* Due to the nature of the class, students will be brainstorming ideas for different activities. The student will be responsible for bringing into class certain materials for teamwork competition. Materials will be things that are typically common household objects. The different activities will dictate the different materials that are to be brought in from home.

**Grading:**  
Student work will be evaluated based on the following criteria:  
- Completion of written work as shown in lab journal. (25%)  
- Contributions to the class environment evident in participation and cooperation. (25%)  
- Completion of original design work and quality of lab performance as demonstrated in class. (50%)

A letter grade will be assigned upon the completion each investigation and at the end of the course.

**Teacherease.com:**  
Parents and students can access grades and attendance through a web-based grade program at teacherease.com. By the end of the first week, parents will be emailed the password to access the program. If you do not receive your password via email, please
contact the office staff at saep@csun.edu and request the password to be re-sent. It is beneficial for you to refer often to the website to check your child's progress and attendance in class. If you have any questions, please feel free to email me.

**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 non-verbal 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.
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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 Science Olympiad 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 _______________________________________________________________