

**California State University, Northridge
Summer Academic Enrichment Program**

How Things Work

Course Overview:

How things work is an exciting class where students will take a closer look at the scientific principles behind some of the most beloved engineering and mechanical devices big and small. Students will use science to explain and demystify the world around them through the gathering of data and the scientific method.

Course Description:

Have you ever looked around you and wondered how does that happen? do you know how electricity is generated and transported? How an image in one place in the world can be seen in another in real time? How instruments create music? Why ice is the only solid that floats in its liquid form...Why the sky is blue but sunsets are red? Why ice skating or bicycling is possible? How do people of different weights balance on a seesaw? These are just a few of the possible topics discussed in this hands-on-science course. Students will explore theory and then look at practical examples of science in action.

Course Goals and Objectives

1. Goal: DESIGN AND BUILD A TESTABLE MODEL

Objective: Investigate science concepts that relate to each example of engineering or device.

Objective: Engineer and build a working testable model.

Objective: Collect and analyze data from the model.

2. Goal: COMMUNICATE RESULTS OF INDEPENDENT INVESTIGATION

Objective: Research and investigate a (student's choice) How _____ works!

Objective: Develop a presentation answering the question (including visuals) and present it to the class.

3. Goal: RESEARCH & RE-PURPOSE AN EXISTING INVENTION FOR A NEW USE

Objective: Research and investigate the engineering of an existing device and its use. Develop a new use for the device or modify it in a novel way demonstrating creativity and ingenuity.

Objective: Present the re-invention to the class. (group project)

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).
4. Calculator (non-graphing).
5. Spirit of teamwork and competition.

Course Grading

Student work will be evaluated based on the following criteria:

- Completion of written work as shown in lab journal.
- Quality of lab performance as demonstrated in class.
- Contributions to the class environment evident in participation and cooperation.

A letter grade will be assigned upon the completion 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 saepl@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 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.

How Things Work

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 **How Things Work** 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 _____