

## PIONEERS Co-Op

## Overview of

STEM Jr. - _Simple Machines with K’nex(Grades 6-8/9)

Tutor: Mrs. April Butterfield
517-612-9632
a.gillett@yahoo.com

Required Text: Curriculum included in lab fee (basic mechanical drawing)
Prerequisite: Basic arithmetic and reading/writing ability.
Lab Fee: $\$ 10.00 /$ semester
Student Evaluation: Students will receive a percentage grade each semester based upon the following:

| Homework: | $50 \%$ |
| :--- | :--- |
| Group Presentation I: | $15 \%$ |
| Group Presentation II: | $15 \%$ |
| Test/Semester Exam: | $10 \%$ |
| Participation/Prepared: | $10 \%$ |


| Grading Scale |  |
| :--- | :--- |
| $90-100 \%$ | $=\mathrm{A}$ |
| $80-89 \%$ | $=\mathrm{B}$ |
| $70-79 \%$ | $=\mathrm{C}$ |
| $60-69 \%$ | $=\mathrm{D}$ |
| Less than $60 \%$ | $=\mathrm{E}$ |

Class Description: Science/Technology/Engineering/Math (STEM) is found intertwined in every aspect of each planned hands-on activity designed to represent real-world projects one might find in industry. While this is a broad topic, the class scope will be based on topics from Physics. Most projects will involve working as a team, collecting data, public presentation of results, iteration of design ideas/achievement of specific goals. Although there is team involvement, each individual will be expected to complete all the work required. Semester exams will cover concepts as found in the homework.

The weekly homework assignments will often include writing a short paragraph on relevant topics or worksheets which focus on practicing the mathematical concepts taught. Homework will also include basic mechanical drawing skills. Most class time will be split between time working together on group projects and short lectures to explain homework, especially working example problems. Tutor is NOT intending for groups to need to meet outside of class times.

## Some of the concepts to be studied include:

- Measurement/Data Collection
- Basic statistic concepts (associated with data collection)
- Meaningful graphing of data
- Basic Probability
- Simple Machines


## Currently planned projects include:

- Tower building: 2-3 weeks $\quad$ K'nex Catapult: 4-6 weeks
- Matchbox Ramp: 4-5 weeks $\quad$ Bridge Building

