



**Fernbrook Farms Environmental Education Center**  
**2021 Winter Upper Level Homeschool Semester**  
***Simple Machines on the Farm***



Ages 12-14 Years Old (students must be 12 years old by the start of classes)

**Class Sessions:** Tuesdays 9:30am-11:30am, Tuesdays 1:30pm-3:30pm,  
Thursdays 9:30am-11:30am, OR Thursdays 1:30pm-3:30pm

***Simple Machines on the Farm** is an exciting hands-on program for this year's Winter Semester. The class will investigate simple machines with activities that are both indoors and outdoors each week. Students will also look at some of the machines at Fernbrook to see how they help us do work on the farm. The order of the classes may change depending on the weather. Students should always dress for the weather.*

Ms. Patty Gurgul

P.S. Please save a skinny shoe box or other small box for one of our classes.

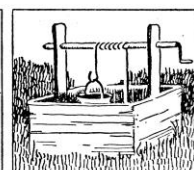
**Intro to Simple Machines & Investigating Inclined Planes**

**January 12<sup>th</sup> or 14<sup>th</sup>**

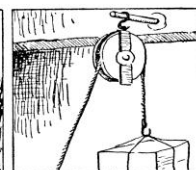
What are simple machines and how do they help us on the farm? After going over an intro to simple machines, we will set out to see how they could help make daily work easier. The students will test out some inclined planes to see which is the most efficient.



Lever



Wheel and axle

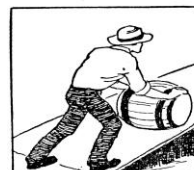


Pulley

**Wheel and Axle**

**January 19<sup>th</sup> or 21<sup>st</sup>**

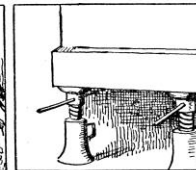
Of course, the wheel and axle are particularly important to the farm! As a class, we will explore how the combination of the two simple machines can make far work much easier for us. The students will be building a vehicle which we will be racing down inclined planes.



Inclined plane



Wedge



Screw

**Levers – Part I**

**January 26<sup>th</sup> or 28<sup>th</sup>**

The students will experiment with building different types of levers in the classroom and then take their machines outdoors to see how we can put them to work.

**Levers – Part II**

**February 2<sup>nd</sup> or 4<sup>th</sup>**

A catapult on the farm? Yes, indeed! The class will make some of our own and see how successful they are at catapulting different objects!

**Pulleys**

**February 9<sup>th</sup> or 11<sup>th</sup>**

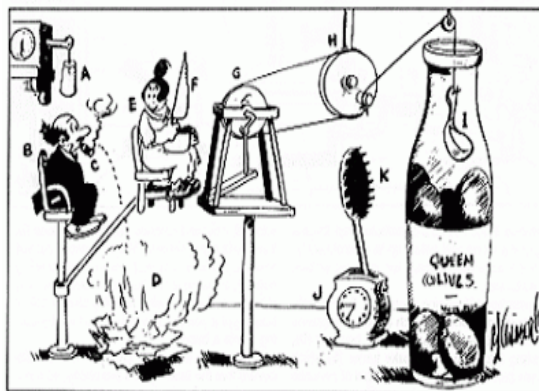
Have you ever wondered how to get a hay bale up in the loft of the animal barn? We will test some pulley systems in this class and discover the usefulness of this simple machine.

**Automaton**

**February 16<sup>th</sup> or 18<sup>th</sup>**

The students will be making an automaton. What is that you ask? We will be making a model that imitates a human movement using a small box, making our own cams, and using some dowels. Each student will be making their own automaton to bring home.

**Fish an Olive Out of a Long-Necked Bottle**



**The Screw and the Wedge**

**February 23<sup>rd</sup> or 24<sup>th</sup>**

In this class, we will investigate both the wedge and the screw. The students will investigate how these machines work using real life examples. The class will also use part of the class to plan for their final projects.

**Final Project – Rube Goldberg Device**

**March 2<sup>nd</sup> or 4<sup>th</sup>**

For the final class of the semester the students will work together in small groups to construct a Rube-Goldberg device that contains several simple machines.



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***Simple Machines on the Farm***



**Ages 12-14 Years Old (students must be 12 years old by the start of classes)**

Name of Child		Age	Date of Birth	Male	Female
Address		City		State	
Zip Code		Current Grade Level			
Parent's Name		Parent's Name			
Home Phone#	Work#	Home Phone#	Work#		
Email		Email			
Cell#		Cell#			
Employer		Employer			
Emergency Contact (Name, Phone #, Relationship)					

**Class Time & Day** : Tuesdays 9:30am-11:30am, Tuesdays 1:30pm-3:30pm,  
Thursdays 9:30am-11:30am or Thursdays 1:30pm-3:30pm

8-week Semester runs: January 12<sup>th</sup>/14<sup>th</sup> to March 2<sup>nd</sup>/4<sup>th</sup>

**Confidential Medical Information & Required Emergency Information**

- ☐ Please indicate information about the registrant(s) **regarding medications, allergies, physical disabilities or restrictions that the instructors should know about.** Attach pages if necessary.

\_\_\_\_\_

\_\_\_\_\_

In case of an emergency, I give my permission to have \_\_\_\_\_ (child/children) receive first aid and be transported to the nearest hospital by professional, emergency personnel. I understand I will be financially responsible for the cost of such treatment. ☐ YES ☐ NO

Parent/Guardian \_\_\_\_\_ Date signed \_\_\_\_\_

I give Fernbrook Farms Environmental Education Center permission to use any photographs or video footage of my child(ren) for any promotional or other legitimate reason. ☐ YES ☐ NO

Parent/Guardian \_\_\_\_\_ Date signed \_\_\_\_\_

**\*Registration Fee - \$139.00 for entire semester** \*Discounts available: sibling, CSA member, and multi-semester registrations\*

- **MAKE CHECKS PAYABLE TO:**  
Fernbrook Farms Environmental Education Center  
(FFEEC)

**MAIL REGISTRATION TO:**  
FFEEC-ULHS

P.O. BOX 228  
Bordentown, NJ 08505

- **REGISTER ONLINE:**  
On our website at [www.FernbrookFarms.com](http://www.FernbrookFarms.com)