

EXTRA CREDIT PROJECT

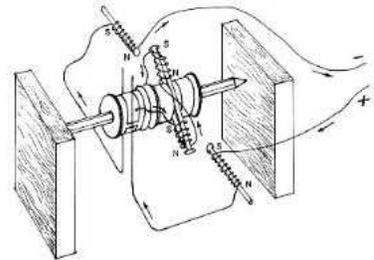
APPLICATION OF CURRENT AND MAGNETIC FIELD: THE ELECTRIC MOTOR



This is an extra credit project. It is completely optional. If you complete this project successfully, you may replace your *two* lowest passing project grades with 100% A+ grades, **or** you may replace *one* zero/failing project grade with a 100% A+ grade. This project is designed to allow students who excel at hands-on learning to show off what they can do. It is intended to be sort of fun, too.

You may not work with another student on this project (no sharing the extra credit). You may discuss your progress with others. You may share information on where to find materials, good sources of information, etc. However, you must construct your motor strictly on your own.

Get started!



Hints before you get started:

Think you aren't handy enough to build something? Think again! Kids build these things for science fair projects all the time, and there are "how-to" books and internet sites that have designs for simple motors you can build for a couple dollars using paper clips and rubber bands. You'll probably have to modify the designs, but the bottom line is anyone can build a motor.

The Assignment

Construct a working electric motor. While you are generally free to construct any type of motor you wish, there are a few guidelines you must follow:

- 🔌 *You may use no commercial motors or motor parts in your motor. This includes any motors or motor parts that might be found in children's "science kit" toys or similar items.*
- 🔌 *The motor must be battery-powered. The voltage difference across the wires that connect your motor to the battery or batteries (the "leads") may not exceed 10 V (measured with the motor not running).*
- 🔌 *The motor may use **NO** permanent magnets. You may use separate batteries to power separate magnets if you wish.*
- 🔌 *To receive the extra credit the motor must meet the above criteria and **be able to run continuously for at least one minute** without being touched (it is OK if the motor requires a push to set it in motion), when tested in the class room.*