

E and M Module 6 – Equipment List and Setup

What	Qty	Activities
Alnico Bar Magnets, such as Sargent-Welch CP32801-00.	1 pair	1, 2 (1 only), 3 (1 only), 4 (1 only), 5
Small stands, such as Sargent-Welch CP78700-01 or WL2046B	3	2
Pith ball on silk string, such as Sargent-Welch WL1945	1	2
Aluminum coated pith ball on silk string, such as Sargent-Welch WL1947	1	2
Small steel ball on a string	1	2
Roll of Scotch tape	1	4
Primary and Secondary Coils, Pasco SE-8653	1	4 (iron core only), 5 (outer coil only), 10 (inner and outer coils only), 11 (both coils and iron core)
Cables, banana plugs on both ends, red and black	3 each	5, 6, 10, 11
Small compasses (approx 18 mm diameter)	About 5	5, 6
Plexiglass stand with a slot in it for the outer coil.	1	5
6V motorcycle battery, banana sockets on the terminals, circuit breaker on one terminal	1	5, 10, 11
Contact key (aka push switch) with banana sockets, such as Science First 10-120	1	5, 10, 11
Vertical wire, suitable power supply. Plexiglas stand with a hole in it for the wire.	1	6
GMR sensor mounted on a probe. Connection to our DAQ board.	1	6
Galvanometer, such as Globe EDM-18	1	10, 11

Notes:

Activity 2 requires three stands. One has a pith ball hanging from it, one the aluminum coated pith ball, and the other the steel ball.

The bar magnets must be sufficiently strong that near them the Earth's magnetic field is negligible.

The coils and galvanometer for Activity 11 must be such that when the current from the primary coil connected to the battery is just closed, there must be a very small but still visible deflection of the galvanometer. In Faraday's words, the deflection must be "just perceptible."

Remind students that the bar magnets are very brittle! Do not drop!
Also, do not store bar magnets with the compasses.

last update Sep. 2, 2009 by Jason Harlow from suggestions by Lilian Leung