



Physics Lesson Plan 1

Topic/Subject: Magnetic field. Its sizes and laws.

Target Group: 10

Objectives:

Obj.1. Modernizing the teaching of Physics in high school.

Obj.2. Increasing teaching efficiency in teaching Physics.

Obj.3. Cultivating students' interest in physics.

Obj.4. Justification of the need to study the phenomenon of electromagnetic induction. Applications of this phenomenon.

Obj.5. Combining practical-experimental observations with the demonstration and definition of notions specific to this phenomenon.

Obj.6. Correct use of equipment with which the phenomenon of electromagnetic induction can be highlighted experimentally.

Approach/Methodology used:

Students approach the Hall sensor with different magnets and magnetized bodies. The sensor transfers the data to the Arduino, which displays it in the computer, by building a real-time graph. Next, the students will vary the intensity of the electric current through a circuit of the linear conductor / circular coil / solenoid type located in the vicinity of the Hall sensor.

Means/Tools/Educational technology

permanent magnets, metal bodies, variable voltage source, circuits, computer based on Windows, Arduino UNO, breadboard, cables, Sensor Hall 49E

Ex. Calculators, Computers, the Internet, a spreadsheet (e.g Excel)

Plan for work

Time	Activities	Methods/ means
10 min	Theoretical approach of the topic	Projector/ board
5 min	Description of the experimental configuration.	Magnets, metallic objects, Arduino,



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		source, Hall sensor
10 min	Determination of magnetic field induction for permanent magnets and magnetized bodies as a function of distance from the Hall sensor and as a function of time for magnetized bodies.	Excel
10 min	Determination of the variation of the magnetic field according to the current intensity through a circuit.	Software analysis
5 min	Comparison between experimental data and theoretical values.	Boardwork
5 min	Explaining the differences.	Discussions with students
5 min	Homework - identifying the phenomenon studied in everyday life	

Assessment/Feedback:

There was personal development and the acquisition of new knowledge by the teachers and students who participated in the program. The students renewed their interest in physics, mainly through laboratory exercises, and secondly from the synthesis works. Through practical training in laboratory STEM techniques, students gained self-confidence by increasing cooperation between them and strengthening their ability to work in a team, improving communication between teacher and students.

Bibliography:

Hugh D. Young , Roger A. Freedman. University Physics with Modern Physics with Mastering Physics