



Colegio "Villa de las Flores" S.C.
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RG-SEC-02-1
VERSIÓN 6



PLAN DE CLASE/NOTA TÉCNICA NIVEL: Secundaria

1. **NOMBRE DEL PROFESOR:** Eduardo Serrano Hernández.
2. **GRADO:** 2°
3. **GRUPO:** A y B
4. **ASIGNATURA:** Ciencias II (Física).
5. **TRIMESTRE:** Segundo.
6. **SEMANA:** 05 al 09 de diciembre del 2022.
7. **TIEMPO:** 40 minutos.
8. **TEMA:** Los fenómenos magnéticos.
9. **PROPÓSITOS:** Científico Tecnológico.
10. **COMPETENCIA:** Elabora un diagrama propio como el visto en clase para la construcción de una red neuronal.
11. **APRENDIZAJE ESPERADO:** Analiza fenómenos comunes del magnetismo y experimenta con la interacción entre imanes.
12. **CONTENIDOS:** Electromagnetismo.
13. **RECURSOS:** Nota técnica con recursos gráficos y esquemas.
14. **MATERIALES:** Cuaderno, dispositivo electrónico y plataforma CVF.
15. **EVALUACIÓN:**
 - **ACTITUDINAL:** Cumple con asistencia y participación.
 - **CONCEPTUAL:** Completa sus apuntes y actividades de refuerzo.
 - **PROCEDIMENTAL:** Maneja la información conceptual inicial.
16. **IMPLEMENTACIÓN DE ACCIONES DEL P.E.M.C.:** En proceso de autorización.

17. INICIO:

¿Qué es el electromagnetismo?

El electromagnetismo es la rama de la física que estudia y unifica los fenómenos eléctricos y magnéticos en una sola teoría. El electromagnetismo describe la interacción de partículas cargadas con campos eléctricos y magnéticos. ... El electromagnetismo abarca diversos fenómenos del mundo real como por ejemplo la luz.

Electromagnetism

During the 19th century, scientists discovered that a variable electric current could generate a magnetic field, and that, conversely, a variable magnetic force could generate electricity. The unification of these linked concepts gave birth to the idea of the electromagnetic field, which helped explain the nature of light. It was also the starting point for the development of radio and television, the telephone, and other inventions that have revolutionized people's lives.

The electromagnetic field

Was discovered one-and-a-half centuries ago, through the brilliant intuition of James Clerk Maxwell, a Scottish scientist. This opened up a completely new field of study with surprising and unforeseen applications.

ELECTRICITY CREATES A MAGNETIC FIELD

The Danish physicist Hans Christian Ørsted (1777-1851) established that an electric current creates a magnetic field.

A MAGNETIC FIELD CREATES ELECTRICITY

Using Ørsted's discovery as a starting point, Michael Faraday (1791-1867), an English chemist and physicist, discovered that, conversely, a variable magnetic field could also generate an electric current.

ELECTROMAGNETIC FIELD

The Scottish physicist James Clerk Maxwell (1814-1879), having established that a variable electric current generates a variable magnetic field, which at the same time generates a variable electric current, and so on. The result is an electromagnetic wave that propagates through space, transporting energy. Maxwell's theory established that electromagnetic waves travel at the speed of light. This is the basis of modern communications.

HEINRICH RUDOLPH HERTZ

Hertz (1857-1894) was a German physicist who, based on the theories and experiments of James Clerk Maxwell, established the physical existence of electromagnetic waves and demonstrated that light waves and electromagnetic waves are the same thing.

Waves

The electromagnetic field propagates in the form of waves, even in a vacuum. Depending on their "size", they have different properties. Some are even visible: we call these visible manifestations of the electromagnetic field colors.

WAVELLENGTH

Indicates the distance between two consecutive crests. Thus, it always has "long" the wave is.

FREQUENCY

Indicates how many times the wave repeats in a unit of time. Waves of different frequencies have different lengths.

WAVES

They are transferred in the direction of propagation. They do not need a material medium to propagate, so they can propagate in a vacuum. They travel at the speed of light (300,000 km/s).

WAVELLENGTH

FREQUENCY

THE SPECTRUM

Is a way to classify waves by their length. Waves of certain wavelengths can be seen as colors.

Represent the wavelength that corresponds to and see the infrared band. We cannot see infrared waves, but some animals can.

Represent the visible wavelength band: the beginning of the ultraviolet band is "color" that can be seen by bees, for example.

The beginning of a revolution

There are numerous ranges of electromagnetic waves, which have applications in many fields. The following are some of the most notable.

Carrier wave
From a carrier wave, the amplitude is modulated to transmit data or information. The frequency remains constant.

AM wave
The frequency of the carrier wave is modulated. The amplitude remains constant. It allows transmission with higher fidelity, free of atmospheric disturbances.

FM wave
The frequency of the carrier wave is modulated. The amplitude remains constant. It allows transmission with higher fidelity, free of atmospheric disturbances.

RADIO

Differently variations in the amplitude or in the frequency of waves. These waves contain the information that is transmitted by radio waves.

700 nm (nanometer)

is, approximately, the red color's wavelength—that is to say, less than a millimeter of a meter.

TELECOMMUNICATIONS

Transmission between cellular telephones and their towers, television broadcasts, and satellite communications are all based on electromagnetic waves.

SARAS

Satellites use electromagnetic waves to detect objects on earth, including meteorological conditions, sea levels. They work by sending and receiving and analyzing the way in which they are reflected when they strike an object.

TRANSFORMERS

In order to increase or decrease the voltage of the alternating current, the transformer passed the way for the transportation of large amounts of electricity over a long distance to the house.

HYDRAULIC

It transforms mechanical energy into electric energy by means of electromagnetic components. It constitutes the base of turbines in large electricity generators.

ELECTRIC CELL

It has numerous applications, many of which arise from its ability to store electric energy in the form of a magnetic field. The applications range from starting a car engine and converting an alternating current into direct current to electricity without changing its voltage.

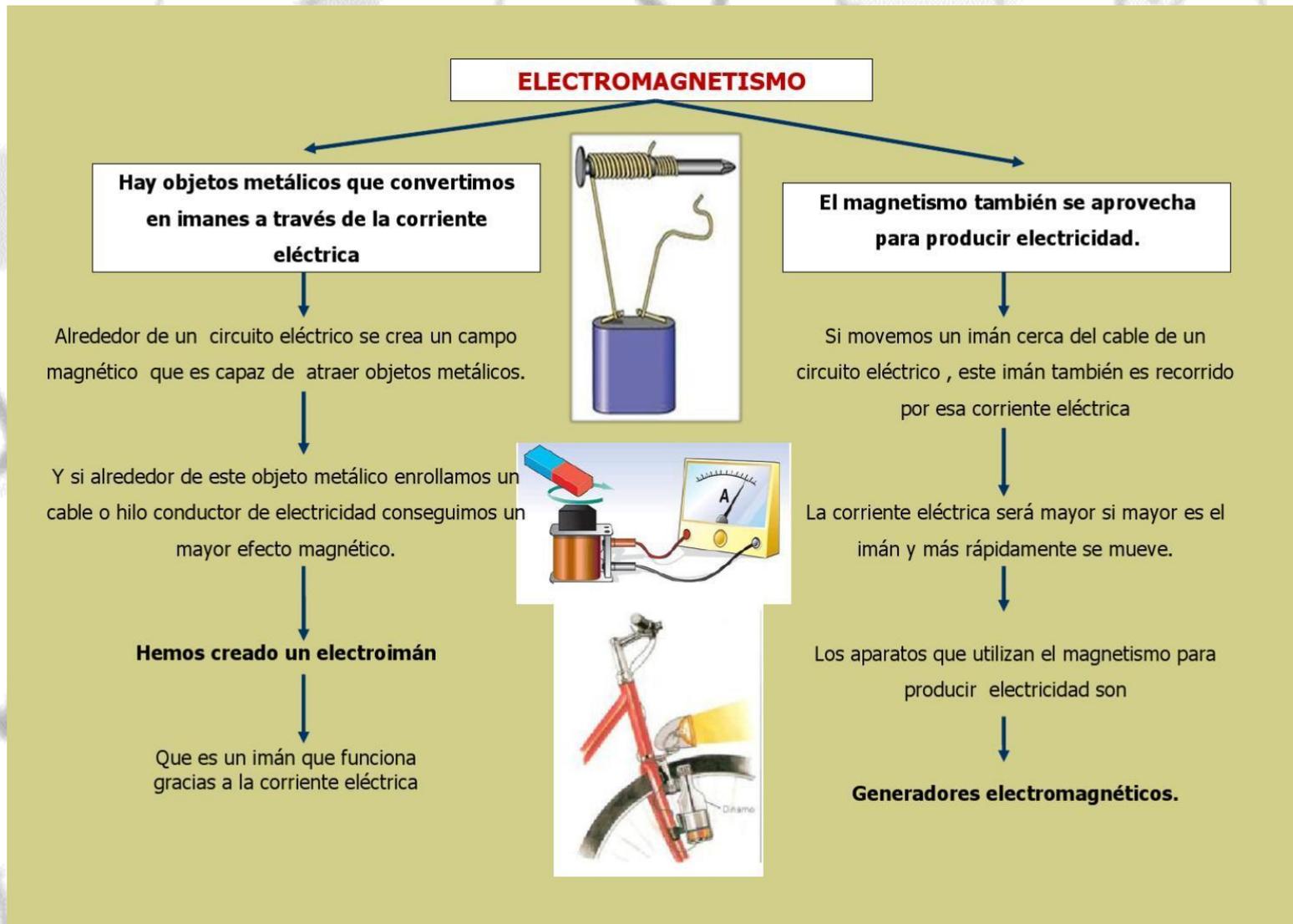
X-Rays

Discovered in the 19th century, they revolutionized clinical diagnostic methods. They allow doctors to observe numerous types of body tissues without opening up the patient.

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18. DESARROLLO Y EXPLICACIÓN DOCENTE:

Electromagnetismo.



19. CIERRE: Actividad: Realizar su apunte de clase.

20. EVALUACIÓN: Heteroevaluación: El alumno debe presentar sus páginas del libro contestadas o subrayadas de acuerdo a lo indicado en clase.