Electromagnetic Spectrum Notes

- **Wave**: something that increases and decreases in space and time.
- **Frequency**: the number of waves that pass a given point in a given time.
- **Wavelength**: the distance between two neighboring peaks or troughs.
EMS Terms (cont’d.)

• **Speed**: speed = frequency x wavelength

• **Amplitude**: the distance between the midpoint of the wave and its peak or trough.
The Electromagnetic Spectrum

the name given to a group of energy waves that are mostly invisible and can travel through empty space

• The waves with the **LONGEST** wavelength (radio waves) are on the **LEFT**.

• The waves with the **SHORTEST** wavelength (gamma waves) are on the **RIGHT**.
Characteristics of Radio waves:

1. longest wavelength.
2. transmit radio, TV signals.
Characteristics of **Microwaves:**

1. shortest wavelength radio waves.
2. absorbed by water molecules.
Characteristics of **Infrared waves:**

1. shorter wavelength than microwaves.
2. felt as heat.
3. hot objects give off infrared waves.
Characteristics of **Visible light:**

1. shorter wavelength than infrared waves.
2. can be seen as colors.
3. $\frac{1}{2}$ of sun’s rays are visible light.
Characteristics of Ultraviolet light:

1. shorter wavelength than visible light.
2. can kill living cells.
3. causes skin cancer.
Characteristics of X-ray radiation:

1. shorter wavelength than ultraviolet.
2. pass through skin, not bone.
3. harmful to humans.
Characteristics of **Gamma radiation:**

1. shortest wavelength (highest energy).
2. from radioactivity or nuclear reactions.
3. harmful to humans.