CLASS NOTES TO UNIT: MICROWAVES (Video lesson + Class + Portfolio assignments)

In this unit we are going to:
-Check the language uses, pronunciation and useful vocabulary (academic and technical) that students have been learning throughout the course, with the help of the context of "microwaves / electromagnetic radiation". (1 & 2).
-Let students elicit the linguistic items they consider relevant for their own needs through a video on electromagnetic radiation. (3)

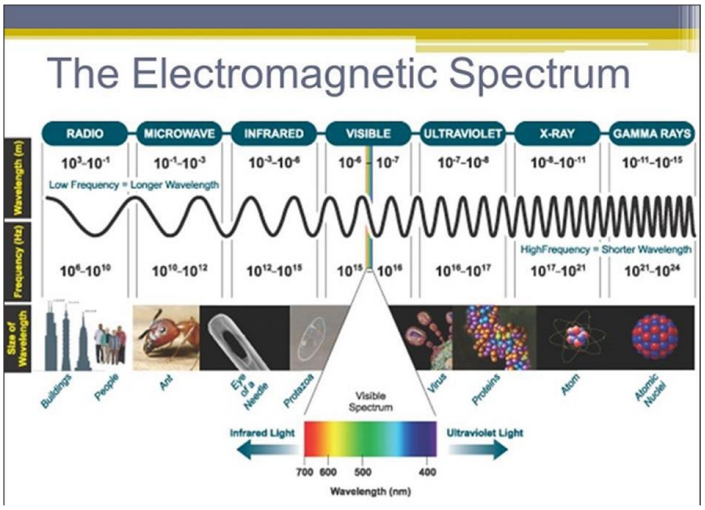
Sections 1-3 will be dealt with in class, and exercises a-c corrected. Section 4 must be included in the students' portfolio.

1.Introduction: Read the following definition of electromagnetic radiation. Consider the following items:

In yellow: grammar items for language functions (definitions / passive voice for impersonal style).

In green: technical language. / **In bold type**: pronunciation (word endings)

*The electromagnetic Spectrum consis**ts** of entire range of electromagnetic **radiation**. Radiation is the energy that travels and spreads out as it propagates. The types of electromagnetic radiation that makes the electromagnetic spectrum is depict**ed** in the following screenshot.*



2. Exercises based on the same content:

Exercise a: Now, students will apply the same highlighting code (and it will be discussed orally) to the following list (some pronunciation items are already in bold type):

Properties of Microwaves

□ Microwaves are the waves that **radiate** electromagnetic energy with shorter wavelength.

□ Microwaves travel in a straight line and are reflected by the conducting surfac**es**.

□ Microwaves are easily attenuat**ed** within shorter distanc**es**.

□ Microwave currents can flow through a thin **layer** of a cable.

Exercise b: Let's do the same here, but adding a comparison/contrast discussion about the advanta**ges**/disadvanta**ges** issue:

Advantages of Microwaves

 Supports larger bandwidth and hence more information is transmitted. For this reason, microwaves are used for point-to-point communications.

 Higher data rates are transmitted as the bandwidth is more.

 Low power consumption as the signals are of higher frequencies.

 Effect of fading gets reduced by using line of sight propagation.

 Satellite and terrestrial communications with high capacities are possible.

 Low-cost miniature microwave components can be developed.

Disadvantages of Microwaves

 Cost of equipment or installation cost is high.

 Electromagnetic interference may occur.

 Variations in dielectric properties with temperatures may occur.

 Inherent inefficiency of electric power.

3. Listening comprehension: Let's watch this video about electromagnetic waves:

https://www.youtube.com/watch?v=FWCN_uI5ygY

In class, we will briefly answer the following questions orally: What does the video show? / How is it structured? / How is it related to your own courses on Physics / Microwaves etc.?

Exercise c: On your own, before the class, watch the video again and insert in as many pieces of information as possible in the table (we will check the whole content together in class):

Concepts explained (reproduce them orally in your own words)	*e.g. impedance matching*
Scientists mentioned (and why)	*e.g. Heinrich Hertz, the first one to…*
Technical keywords (and pronunciation)	*e.g. Voltage, charge, propagation…*
Language functions (e.g. introduce, define, clarify, expressing cause and effect…)	*e.g. let's consider…/ based on this understanding… / resulted in… / he had already laid out the foundations for…*
Connectors	*e.g. however, more specifically…*

Use of prepositions, measuring units, acronyms, etc.	*e.g.* ***At*** *the speed of light, ohms…, ELD…*

4. Search assignment for your portfolio: Watch the video once more. Write an outline of its content, dividing it into sections according to the different concepts explained. Then, write a question for each one of the parts in which you have divided it. Questions must not be as simple as: *What is propagation*, but a little more complex. E.g.: *How did Hertz demonstrate the radiation of electromagnetic waves?* Answer each question with your own words in 1-2 short sentences (make an effort to summarize, that is, reproduce only the most relevant information).