Solar energy and antennas

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Índex

Introduction

This unit, 'Solar Energy and Antennas', deals with the installation and the functioning of photovoltaic panels. It also deals with the characteristics and types of antennas used for broadcasting and receiving electromagnetic waves. In the last section you will see an electrician's CV. The aim is to make you get acquainted with specific vocabulary and expressions that you already know in your native language and which are used to discuss electrical terms.

The unit is composed of four different sections. Each of them has a similar structure:

- There is a text related to one of the above mentioned topics. They are technical texts, usually descriptive.

- There is a short story about two electricians, who move from one location to the other to install, revise and certify different electrical installations. This section is called "Storyline", and it starts with the welcoming of Bill, an apprentice from UK. He is in Barcelona to assist Jordi in different works. This section is intended to show the everyday life of an electric technician, with emphasis on job related conversation. The idea is for you to get acquainted with the daily tasks that an electrician does in English.

- There is a list of specific vocabulary with terms translated into Catalan in order to help you with the most difficult words that have appeared in the texts and the conversations.

- There is the grammar section, with the explanation of different grammar points and a great deal of examples that should help you understand the mechanics of the language.

In the section 'Photovoltaic Installations', you will get introduced to the different components of a photovoltaic installation, with a brief description of each of them. In the section 'Antennas', you will learn about antennas, see different types, and the parameters used to transmit and receive electromagnetic waves. In the last section, 'Looking for a job' you will see a CV of an electrician, which could be used as a sample to write a CV in English for those who have decided to look for a job in another country.

As far as the grammar is concerned, in the first section of this unit you will learn about a category of verbs called 'modal verbs'. These form a group of verbs that have no independent meaning, but depend on the meaning of other verbs to make sense. Modals do not express actions, but indicate things like obligation, ability or possibility. In this section you will learn which are the modal verbs and their use and meaning. The first section also introduces the different ways of expressing the future, with their corresponding adverbials of time, and a verb

form called 'imperative', which we use to give orders and instructions. The second grammar section describes some basic sentence structures, as for example, those of the statements, the questions, the imperative, and the passive. The passive voice is very important in English because it is more widely used than in Catalan or Spanish, so you will learn how to form and use the passive voice, and how to distinguish it from the active voice. The third section introduces two other types of sentences. On one hand, you will learn about the conditional sentences, which include a condition and the result if the condition is accomplished; on the other hand, we will introduce the relative clauses, which are always introduced by a relative pronoun and are mostly used to define a noun or explain some characteristic of that noun.

The 'everyday language' sections introduce more social language. In the first section, you will find different ways of giving and responding to instructions. You do this when you must indicate other people what they must do. They are very similar to orders, and in fact, both functions use the imperative form of the verb. The second section is devoted to making and responding to requests. A request is an expression in which we ask other people to do something. It is like giving orders or instructions, but using more indirect, polite means. The emphasis will be on using the appropriate expression in each context. Finally, the third section is about making and responding to suggestions. We make suggestions when we think that other people should do something. We may also be included in the suggestion, as when we plan to do something together with other people. You will see the different possibilities to make suggestions, with their corresponding sentence structure, and the ways of responding to a suggestion.

Learning objectives

At the end of this unit, you should be able to:

1. Understand oral messages in standard language both in daily life situations and in the professional field of the electrical installations, as well as analize the general meaning of a message and relate it to the corresponding language resources.

- Arrange the elements that make up a message.

- Identify the main idea in a message.

- Be conscious of the importance of understanding the main ideas in a message even if you do not understand all the elements that compose the message.

- Get specific information in messages about usual aspects of the everyday and professional life.

- Identify the main ideas in a well-structured speech in standard language about well-known aspects and transmitted in the media.

2. Understand simple written texts related to the field of electrical installations and analize the contents comprehensively.

- Choose reference material and technical dictionaries.

- Read simple texts in standard language.

- Translate a text in standard language by using reference materials, if necessary.

- Interpret the general meaning of a message.

- Relate the text to its correponding context.

- Identify the terminology used in a message.

- Interpret technical manuals.

3. Produce clear, well-organized oral messages frequently used in companies of the field of electrical installations and take an active part in professional conversations.

- Express the tasks which you have to carry out in your job.

- Communicate by using formulas, connectors and strategies used in the interaction with other people.

- Describe and arrange a task in a sequence.

4. Write simple texts in standard language as normally used in the field of electrical installations and use the appropriate resources for each situation.

- Write short texts referring to everyday and/or professional aspects.

- Summarize texts related to your job.

- Organize the information in a coherent way.

- Apply the appropriate rules and specific vocabulary when filling in documents.

5. Show the appropriate attitude and behaviour in communicative situations as established by international conventions.

- Define the most distinctive aspects of the customs of English-speaking communities.

- Describe the social conventions of your country.

- Identify the values and beliefs which are characteristic of English-speaking communities.

- Identify the social and professional aspects of your job in all types of oral and written messages.

- Apply the social conventions in English-speaking communities.

1. Photovoltaic installations

Energy is an essential resource for the development of a society. But the increasing demand of energy is leading to the promotion of renewable energies, such as solar, wind power, or water energy.

Solar power

Photovoltaic installations transform the solar radiation into electricity. A photovoltaic system uses solar panels composed of a number of solar cells to supply usable electric power.

There are two main types of photovoltaic installations, **stand-alone** and **grid-tied**. The stand-alone installations are especially useful for rural areas. The main difference between them are their components. A stand-alone will need a controller, whereas a photovoltaic system tied to the grid needs equipment to measure the energy produced and sent back to the public grid.

Solar cells are usually made of silicon, which is a semiconductive material. The cells absorb some of the photons of sunlight and the photons' energy is transferred to electrons in the semiconductor material. With the energy from the photons, electrons can escape its usual position in the semiconductor atom to become part of the current in an electrical circuit.

The solar cells collect the rays of the sun and convert solar radiation into direct current, which is also converted into alternating current by a piece of equipment called **inverter**. Connected to the inverter is another device for measuring the electricity produced by the photovoltaic system. Generated electricity may then be reimbursed by the electricity supplier.

To use the energy from the **array**, we also need other components, such as **inverters**, **charge controllers** and **batteries**. There are two basic categories of PV (photovoltaic) panels: crystalline silicon or thin-film. The charge controller is needed to prevent batteries from overcharging and it prolongs the battery life. The inverter converts the direct current (DC) output of the PV panels into alternating current (AC) for AC appliances, or to be fed into a commercial electrical grid. Batteries store energy for supplying electrical appliances.

Storyline

A client's WiFi coverage is poor. Connections are only present in the living room. Sometimes the WiFi connections drops unexpectedly for no reason. He got frustrated and contacted Bill and Jordi for a quick solution.

Client: I have a problem, my WiFi connection is so poor! What could be the problem?

Jordi: I guess it's caused by radio signal interference.

Bill: What do you think could cause interferences?

Jordi: Radio signals from electronic devices can interfere with your wi-fi wireless network signals.

Client: What kind of devices? I have a lot here in the house.

Bill: For example, cordless phones, bluetooth devices or microwave ovens can kill your wi-fi network connection when they are switched on.

Client: What's the solution?

Jordi: First of all, we'll start by troubleshooting, by moving your router network equipment to another location, to see if the interference will be eliminated.

1.1 Vocabulary

- **Resource**: recurs

- **Increasing demand**: demanda creixent

- **Renewable energies**: energies renovables

- **Wind power**: energia eòlica

- **Stand-alone**: aïllat

- **Grid-tied**: connectat a la xarxa elèctrica

- **Public grid**: xarxa pública

- **Sunlight**: llum del sol

- **Inverter**: inversor

- **Electricity supplier**: subministrador d'electricitat (companyia elèctrica)

- **Array**: conjunt de plaques solars

- **Overcharging**: sobrecàrrega

- **Electric grid**: xarxa elèctrica

- **Store**: emmagatzemar

- **Appliance**: aparell (electrodomèstic)

- **Coverage**: cobertura

- **Connection drops**: es perd la connexió

- **Interference**: interferència

- **Device**: dispositiu

- **Cordless phone**: telèfon inalàmbric

- **Microwave oven** forn microones

- **Troubleshooting**: solucionar problemes

1.1.1 Grammar

In English there is not a specific verb tense to express the future (like the *present simple* or the *past simple*). We can speak about the future with the modal verb *will* or with the expression *be going to*. There is a clear difference between the future with *will* and the future with *be going to*. In general, *will* is used to express something that we know, or think, that will happen in the future and *be going to* is used to express something that we have already planned or decided to do. Sometimes, we can also speak about the future with the *present continuous* or the *present simple*.

Future actions: 'will'

A very common way of expressing the future is with the modal verb *will*. The table shows the forms and uses of the future with *will*.

See grammar section in Unit 2 section 3 for the conjugation of *will* and further information about the modal verbs.

Taula 1.1. Conjugation of the future with //will// (//work//)

	Affirmative Long form	Affirmative Short form	Negative Long form	Negative Short form	Interrogative
I	will work	'll work	will not work	won't work	Will I work...?
You	will work	'll work	will not work	won't work	Will you work...?
He/She/It	will work	'll work	will not work	won't work	Will he work...?
We	will work	'll work	will not work	won't work	Will we work...?
You	will work	'll work	will not work	won't work	Will you work...?
They	will work	'll work	will not work	won't work	Will they work...?

We use *will*:

1) To speak about future actions which do not depend on our will (Cat. voluntat):

- It *will rain* all the week (Cat. Plourà tota la setmana).

- Mrs Green *will give* a speech during tomorrow's meal (Cat. La Sra Green farà un discurs durant el dinar de demà).

- *Will* you *come* to work at the weekend? (Cat. Vindràs a treballar el cap de setmana?).

- I *will be* 65 next year (Cat. Faré 65 anys l'any que ve).

2) To make predictions for the future:

- One day, we *will work* from home (Cat. Un dia treballarem des de casa).

- The offices *will close down* (Cat. Les oficines es tancaran).

- I think that I *will talk* to Mr Harris (Cat. Crec que parlaré amb el Sr Harris).

- I'm sure that you *will get* well very soon (Cat. Estic segur que et recuperaràs molt aviat).

Predictions

To make a prediction means to say what you think will happen in the future. For this reason, many predictions begin with expressions like:

- *I think that...* (Cat. Crec que...)

- *I'm sure that...* (Cat. Estic segur que...)

- *I'm convinced that...* (Cat. Estic convençut que...)

- *I believe that...* (Cat. Crec que...)

- *I guess that...* (Cat. M'imagino/Suposo que...)

When we use any of these expressions, we must use *will*. For example:

- *I think that I will stay at home tonight* (Cat. Crec que em quedaré a casa aquesta nit).

- *I'm convinced that everything will get better* (Cat. Estic convençut que tot anirà millor).

- *I guess I will have to go, won't I?* (Cat. Suposo que hauré de marxar, oi que sí?).

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3) To make requests, offers and promises:

- *Will* you please *come* immediately? (a request) (Cat. Pots venir de seguida si us plau?).

- Don't worry your English. I *will speak* to Mr Thomson (an offer) (Cat. No et preocupis pel teu anglès. Ja parlaré jo amb el Sr Thomas).

- I *won't help* you again (a promise) (Cat. No et tornaré a ajudar).

4) To express a conditional sentence:

- If you write a good CV, you *will find* a job (Cat. Si redactes un bon currículum, trobaràs una feina).

- If you learn English, you *will have* more opportunities (Cat. Si aprens anglès, tindràs més oportiunitats).

- If we have a meeting this evening, I *won't be able to* go (Cat. Si tenim una reunió aquest vespre, jo no podré anar-hi).

Plans and intentions: 'be going to'

Here are the forms of the future with *be going to*:

TAULA 1.2. Conjugation of the past continuous (//work//)

	Affirmative Long form	Affirmative Short form	Negative Long form	Negative Short form	Interrogative
I	am going to work	'm going to work	am not going to work	'm not going to work	am I going to work...?
you	are going to work	're going to work	are not going to work	aren't going to work	are you going to work...?
he/she/it	is going to work	's going to work	is not going to work	isn't going to work	is he going to work...?
we	are going to work	're going to work	are not going to work	aren't going to work	are we going to work...?
you	are going to work	're going to work	are not going to work	aren't going to work	are you going to work...?
they	are going to work	're going to work	are not going to work	aren't going to work	are they going to work...?

We use *be going to* in these cases:

1) To express a future event which is planned or decided:

- I *am going to join* an international organization (Cat. M'apuntaré a una organització internacional).

- He *is going to look for* a job (Cat. Buscarà feina).

- We *are going to take* this woman to hospital (Cat. Anem a portar aquesta dona a l'hospital).

- They *are going to (go to)* France next year (Cat. L'any que ve aniran a França).

2) To express an event in the near future based on a present evidence:

- Look at his face! He *is going to explode* (Cat. Fixa't en la seva cara! Està a punt d'explotar).

- You're working too much. You *are going to fall* ill (Cat. Treballes massa. Et posaràs malalt).

When we conjugate the verb *go* in the *be going to*-form, we usually eliminate the infinitive. We can say: *I'm going to go to work*, but we usually say: *I'm going to work*.

Other ways of expressing the future

Sometimes, we can express plans and intentions with the **present continuous** tense. In this case, the context must clearly indicate that we are speaking about the future. For example:

- I *am attending* an international fair next year (Cat. L'any que ve aniré a una fira internacional).

- He *is working* until 11 tonight (Cat. Aquesta nit treballa fins a les 11).

- We must go. We *are taking* a bus in three minutes (Cat. Hem de marxar. D'aquí a tres minuts agafem un autobús).

When we speak of events in timetables, schedules, etc., we can use the **present simple** to speak about future events, just as we do in Spanish or Catalan. Again, it is necessary to include a time adverbial referring to the future. For example:

- My train *leaves* at four tomorrow (Cat. El meu tren surt a les quatre demà).

- We *start* at 10 next Monday, don't we? (Cat. El dilluns que ve comencem a les 10, no?).

Adverbs and adverbials of time used with the future forms

Some adverbs and time expressions that we normally use with the future tenses are:

- Tomorrow (Cat. demà)

- The day after tomorrow (Cat. demà passat)

- Next week/month/year, etc. (Cat. la setmana que ve, el mes que ve, l'any que ve, etc.)

- In the future (Cat. en el futur)

- Tonight (Cat. aquesta nit)

- This evening, etc. (Cat. aquest vespre, etc.)

- One day (Cat. un dia)

- In a moment (Cat. d'aquí a un moment)

We can place these adverbs and adverbials at the end or at the beginning of the sentence, so we can say:

- I will tell you *tomorrow*.

- *Tomorrow* I will tell you.

When we place the adverb at the beginning, we emphasize the time; when we place it at the end, we emphasize the action.

1.1.2 Communication

In our daily and working lives, we very often need to follow instructions to do some specific things. Many products come with a manual, which contains the instructions to operate, instal or assemble (Cat. muntar) a product or a device.

Sometimes we may also need to give instructions. For example, we can give instructions to teach how to operate a machine, when we give someone a recipe (Cat. recepta de cuina) or when we need someone to behave in a specific way.

Giving directions (Cat. donar indicacions) is a very common example of instructions. We give directions when we want someone to find or go to a specific place. To give directions, we need to use specific words and expressions.

Giving instructions

The most common way of giving instructions is with the *imperative* (Cat. imperatiu) form of the verb.

The imperative

The imperative is used to give orders and instructions. These are the characteristics of this form:

- It is the same as the base form of the verb (*work!*).

- The imperative sentences do not have a subject (the implicit subject is *you*, but we never say it).

- The negative form is with *do not* (*don't*) in front of the verb (*don't work*).

- In writing, we normally write an exclamation mark (!) at the end of the sentence.

Here are some examples with the imperative form::

- *Go!* (Cat. vés-te'n! / aneu-vos-en / vagi-se'n! / vagin-se'n!).

- *Don't smoke!* (Cat. no fumis! / no fumeu! / no fumi! / no fumin!).

In the following example, we give instructions to write and send an e-mail. The imperative forms are in bold type (Cat. negreta).

Giving instructions (verbs)

First of all, **locate** your e-mail program (Outlook, G-Mail, Thunderbird, etc.) in your computer. **Click** on the icon to run the program and a text editor will appear. **Type** the receiver's address in the word field called "To..." and next **type** the subject of your message in the corresponding field. After this, **write** the text of your message in the text editor. When you finish, **review** the spelling and **check** any mistakes. Finally, **click** on the button "Send" and the message will reach its destination in a few seconds.

See Unit 1, section 2 'Communication' for more information about connectors.

In oral instructions, we should also use the appropriate connectors, especially the connectors that are used to list ideas. Notice the connectors in the text (in bold type):

Giving instructions (connectors)

First of all, locate your e-mail program (Outlook, G-Mail, Thunderbird, etc.) in your computer. Click on the icon to run the program and a text editor will appear. Type the receiver's address in the word field called 'To...' and **next** type the subject of your message in the corresponding field. **After this**, write the text of your message in the text editor. **When you finish**, review the spelling and check the text for possible mistakes. **Finally**, click on the button 'Send' and the message will reach its destination in a few seconds.

In written instructions, we can write the sentences in a list:

Written instructions

To write and send an e-mail:

1. Locate your e-mail program (Outlook, G-Mail, Thunderbird, etc.) in your computer.

2. Click on the icon to run the program and a text editor will appear.

3. Type the receiver's address in the word field called 'To...'.

4. Type the subject of your message in the corresponding field.

5. Write the text of your message in the text editor.

6. Review the spelling and check the text for possible mistakes.

7. Click on the button 'Send'.

The use of the modal verb *must* is not appropriate to give instructions. This verb expresses 'obligation' and instructions are not obligatory. However, we can use *must* to give orders because orders are obligatory.

Sometimes, the other person may interpret the instructions as orders, especially if we use the wrong tone of voice (remember that the imperative is used to give orders and instructions). To avoid misinterpretations, we can use the modal verbs *should* or *can* to give instructions.

In the following text, we have used modal verbs to give instructions (modal verbs are in bold type):

Giving instructions (with modal verbs)

First of all, you **should** locate your e-mail program (Outlook, G-Mail, Thunderbird, etc.) in your computer. Then you **should** click on the icon to run the program and a text editor will appear. Now you **can** type the receiver's address in the word field called 'To...' and the subject of your message in the corresponding field. After this, you **can** write the text of your message in the text editor. When you finish, you **should** review the spelling and check the text for possible mistakes. Finally, you **should** click on the button 'Send' and the message will reach its destination in a few seconds.

Giving directions

Giving directions means to explain someone the way to a certain place. We can ask for directions with these questions:

- *How can I go to...?* (Cat. Com puc anar a...?)

- *Can you tell me the way to...?* (Cat. Em pot indicar el camí per anar a...?)

Directions, direction and address

These three words are sometimes confusing, especially for a Spanish speaker. Mistakes in their use are common. Here is the difference:

- **Directions** (Cat. orientacions, indicacions): always in plural; a synonym of 'instructions' (for example: *I'll give you directions to do the exam*).

- **Direction** (Cat. direcció): the term refers to a course taken in relation to a reference point (for example: *We're going in the wrong direction*).

- **Address** (Cat. adreça): the place where a building is located (for example: *my address is 23, Green St.*).

Some verbs commonly used to give directions are:

- *Walk* (Cat. caminar)

- *Turn* (Cat. girar)

- *Take* (Cat. prendre, agafar)

- *Go along* (Cat. anar per)

- *Go across* (Cat. travessar)

- *Go past* (Cat. passa per davant de)

Here are some expressions for giving directions:

- *Turn (first/second...) left/right* (Cat. Gira pel [primer/segon...] carrer a l'esquerra/dreta).

- *Turn left/right at the traffic lights* (Cat. Gira a l'esquerra/dreta quan arribis al semàfor).

- *Turn left/right into Green St.* (Cat. Gira a l'esquerra/dreta per Green St.).

- *Go straight ahead/on* (Cat. Ves recte).

- *Go along this street* (Cat. Ves per aquest carrer).

- *Go across Green St.* (Cat. Travessa Green St.).

- *You will go past a bank* (Cat. Passaràs per un banc).

- *Take the (first/second...) street on the left/right* (Cat. Agafa el [primer/segon...] carrer a l'esquerra/dreta).

The expressions *go straight ahead* and *go along* are often confused:

- *Straight ahead* is an adverb that indicates the direction of the movement: we must not say the name of the street with this expression. It is wrong to say: ~~Go straight ahead Green St. and turn left~~. We must say: *Go straight ahead and turn left*.

- *Along* is a preposition, so we must use a noun. It is wrong to say: ~~Go along and turn left~~. We must say: *Go along Green St. and turn left*.

To give directions, we must be as clear as possible. The sentences must be short and very simple, so do not give long and detailed information. The words and expressions must be appropriate to the context. The normal pattern is: first, explain the way to the place; next, say the exact location by using the appropriate prepositions and reference points (for example: *opposite a park*). We generally use the imperative form or the modal verb *should* (but not *must*, for the reason explained in the side note in this section). We can combine the imperative with the future form (with *will*): *you will go past a bank*, *you will see a park*, etc.

A frequent mistake when giving directions is the wrong use of the preposition *until* (Cat. fins a). This is a preposition of time, so it is wrong to say: ~~until the traffic lights~~. We must say: *until you come to the traffic lights*.

Indicating the location

To give directions, it is sometimes useful to indicate the location of buildings and other reference points. To indicate the location, we must use the appropriate prepositions of place. Here are some useful expressions:

When we say the name of the street, we do not include the article *the*. It is wrong to say: *Go along ~~the~~ Green St.* or *It is in ~~the~~ Green St.*, but we can use the article when the name is 'Main St.': *Go along the Main St.*, *It is in the Main St.*.

- *On the left/right* (Cat. A l'esquerra/dreta)

- *In Green St.* (Cat. A Green St.)

- *On the corner of Green St. and Oak St.* (Cat. A la cantonada de Green St. i Oak St.)

- *Next to a hotel* (Cat. Al costat d'un hotel)

- *Opposite the park* (Cat. Davant del park)

- *Across the street* (Cat. A l'altra banda del carrer)

- *Between the bookshop and a bank* (Cat. Entre la llibreria i un banc)

- *Around the corner* (Cat. al girar la cantonada)
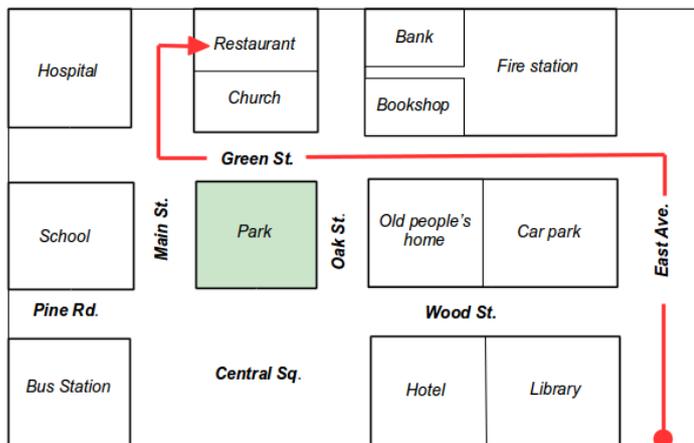
The names of the streets

In the written form (for example, in maps and addresses), we may find the following abbreviations:

- St. : street

- Rd. : road

- Sq. : square

- Ave. : avenue

- Blvd. : boulevard

These abbreviations are always placed after the proper name: *Green St.*, *Central Sq.*, etc.

In the following dialogue, one person is giving directions (see map for reference):

FIGURA 1.1. Map

Giving directions:

A: Excuse me, how can I go to the restaurant?

B: The restaurant? Well, go along this street and turn second left. That's Green Street. Go straight ahead, cross Oak Street and then turn right into the Main Street. Go past a church on the right and the restaurant is right there, next to the church.

2. Antennas

An antenna has been defined as a mean for radiating or receiving radio waves. In addition to receiving or transmitting energy, the antenna is used to optimize the energy radiation in some directions while suppressing it in others. An antenna may be a piece of conducting wire, an aperture, an assembly of elements (array), a reflector, a lens, etc.

There are different types of antennas:

Wire antennas: They are very common. We can see them on automobiles, buildings, ships, etc... They come in different shapes used for different purposes:

A wire antenna kit. Font: Wikipedia

- **Monopole**: it is a metal pole and it works well to receive signals in a relatively narrow range. They are used in cell phones or AM/FM radios.

- **Simple dipole**: they point in two different directions. They are more effective than a simple monopole.

- **Loop antenna**: it is a big dipole. It is good for wide range of frequencies, but it is not very effective for specific frequencies.

- **Bowtie**: it is a special type of dipole antenna, very good for frequencies in the UHF band.

- **Yagi**: it is the most common antenna in TV signal receiving. Internally, it is composed by a group of dipole antennas which behave like a single device (that is why we call it **Yagi antenna** instead of Yagi group or Yagi antennas, in plural), aligned one next to each other along the antenna axis (one receiver plus one reflector at the back and several directors at the front). Each dipole has a different size, being tuned to get a specific frequency. They are designed in such a way that one dipole does not interfere another one, but the full set behaves as a wide band receiving antenna.

Yagi antenna. Font: Wikipedia

Aperture antennas: They can have different configurations: pyramidal horn, conical horn or rectangular waveguide. They are very useful for aircraft or spacecraft applications.

Array antennas: Sometimes the radiation of a single element might not be enough. In this case an aggregate of radiating elements in an electrical and geometrical arrangement (an array) will result in the appropriate radiation characteristics.

Reflector antennas: They are used to communicate over great distances. They transmit and receive signals that travel millions of miles. The parabolic reflector for satellite TV signal is the most common.

Parabolic antenna. Font: Wikipedia

Lens antennas: They can be used in most of the same applications as the reflector.

If we want to measure the parameters of an antenna we use:

The **frequency range**, which means the kind of signals it will pick up: television, phone signals, WiFi, etc. They all use different frequencies. Antennas transmit and receive electromagnetic waves. These waves, which take a particular shape, propagate through the air at the speed of light, and they repeat periodically. The faster the waves oscillate, the shorter the wavelenght. The frequency measures how fast the waves oscillate.

Antennas have different shapes and sizes, as different frequencies are better captured by different sized antennas. The measure units used are the kilohertz (kHz), only used for radio, megahertz (mHz), which is used in cell phones, FM, television and WiFi; and gigahertz (Ghz), which is used for satellite signals.

The **Gain**, which is closely related to directivity. It is a measure which takes into account the efficiency of the antenna and its directional capabilities. Gain means how good is the signal reception when the antenna is well directed to the emitter. It is measured in decibels (dB).

Gain and frequency range work together. An antenna will usually do a certain amount of gain at some frequencies, and a higher or lower gain at some other frequencies.

Distance is as well an important factor. The amount of power goes down at a bigger distance. There is a limit to the distance, at some point it will be impossible to get any signal.

Typical parameters of antennas are gain, radiation pattern, beamwidth, polarization, and impedance.

Storyline

Jordi and Bill are at a client's house trying to solve his WiFi coverage problems. Jordi is in the kitchen.

Bill:There is no WiFi connection in the kitchen.

Jordi: I suspect the microwave is interfering. Unplug the microwave oven from the socket.

Client: The WiFi is working now. But I need the microwave anyway in the kitchen.

Jordi: The truth is that the microwave is sabotaging the WiFi network. Most problems with microwaves involve products that use the 2.4 GHz band, which can interfere with 802.11g or single-band 802.11n routers.

Client: Then, what do I do?

Jordi: The solution is to buy a dual-band router that operates simultaneously at 2.4GHz and 5GHz.

Bill: I'd also advice you to take proper security measures to ensure your internet connections are protected from unauthorized access by using a secured password.

Client: Thank you. I appreciate your advice.

2.1 Vocabulary

- **Radio wave**: ona de ràdio

- **Optimize**: optimitzar

- **Suppress**: suprimir

- **Aperture**: apertura/obertura

- **Assembly of elements**: conjunt d'elements

- **Lens**: lent

- **Monopole antenna**: antena monopol (un sol eix)

- **Simple dipole antenna**: antena dipol (de dos eixos)

- **Wide range of frequencies**: àmplia gamma de freqüències

- **tuned**: sintonitzat

- **Aircraft/spacecraft application**: aplicació aeronàutica/aeroespacial

- **Frequency range**: gamma de freqüències

- **Speed of light**: velocitat de la llum

- **The faster... the shorter**: com més ràpida, més curta

- **Wavelenght**: longitud d'ona

- **Different sized antennas**: antenes de diferent mida

- **Gain**: guany

- **Efficiency**: eficiència, rendiment

- **Directional capabilities**: capacitats direccionals

- **Higher or lower**: més alt o més baix

- **Radiation pattern**: diagrama de radiació

- **Polarization**: polarització

- **Impedance**: impedància

- **Coverage problems**: problemes de cobertura

- **Suspect**: sospitar

- **Microwave**: microones

- **Socket**: endoll

- **Unauthorized access**: accés no autoritzat

- **Secured password**: contrasenya segura

- **Advice**: consell

2.1.1 Grammar

A *subornidate clause* (Cat. oració subordinada) is a part of the sentence that has no meaning of its own. Its meaning depends on the *main clause* (Cat. oració principal).

The comparative and superlative sentences are those which are used to compare two or more things. To make comparisons, we must use an adjective (a word which tells a quality or characteristic of a noun) or an adverb (a word which tells how an action is done). In comparative and superlative sentences, both adjectives and adverbs sometimes take a special form, which is called the *comparative form*.

On the other hand, the relative clauses are subordinate clauses that we can add to a sentence to speak about the characteristics of a noun. In this sense, they are similar to adjectives. All the relative clauses are introduced by a *relative pronoun*. This pronoun refers to a noun, called the *antecedent*, of which we say or explain something. The relative clauses are often used to describe things.

The comparative sentences

The comparative sentences are used to compare two things. There are three types of comparative sentences: *comparative sentences of superiority*, *comparative sentences of equality* and *comparative sentences of inferiority*.

Comparative sentences of superiority

In these sentences, we say that one thing is more than another. To express the comparison, the adjective and the adverb take the comparative form, which depends on the type of adjective or adverb. The following tables show the comparative forms of superiority for adjectives and adverbs:

Adjectives:

TAULA 2.1. comparative forms of superiority (adjectives)

Type of word	Comparative form	Examples
One-syllable adjectives	-ER	*big > bigger* (Cat. gran > més gran)
Two-syllable adjectives ending in -y	-IER	*happy > happier* (Cat. feliç > més feliç)
Other adjectives	MORE + adjective	*intelligent > more intelligent* (Cat. intel·ligent > més intel·ligent)
Irregular adjectives		*good > better* (Cat. bo > millor)
		bad > worse (Cat. dolent > pitjor)

Adverbs:

Taula 2.2. comparative forms of superiority (adverbs)

Type of word	Comparative form	Examples
Adverbs ending in -ly	MORE + adverb	*easily > more easily* (Cat. fàcilment > més fàcilment)
Other adverbs	-ER	*late > later* (Cat. tard > més tard)
Irregular adverbs		*well > better* (Cat. bé > millor)
		badly > worse (Cat. malament > pitjor)
		far > further (Cat. lluny > més lluny)

In the comparative sentences of superiority, the two elements of the comparison are separated by the conjunction *than* (Cat. que). Here are some comparative sentences:

- The English grammar is *easier than* the French grammar (Cat. La gramàtica anglesa és més fàcil que la gramàtica francesa)

- But the English pronunciation is usually *more difficult than* the French pronunciation (Cat. Però la pronunciació anglesa és normalment més difícil que la pronunciació francesa)

- Running is certainly *better than* smoking (Cat. Córrer és certament millor que fumar)

- Nowadays we can send a message much *more quickly than* before (Cat. Avui en dia podem enviar un missatge molt més ràpidament que abans)

- Cats usually run *faster than* dogs, don't they? (Cat. Els gats normalment córren més de presa que els gossos, no?)

Sometimes it is not necessary to include the two terms of the comparison in the same sentence. For example:

- Which is *better* -the red one or the blue one? (Cat. Quin és millor - el vermell o el blau?)

- I think I'll take a beefsteak although it's *more expensive* (Cat. Em sembla que em prendré el filet encara que sigui més car)

- If you ask for somebody's help, you will can do the job *more easily* (Cat, Si demanes que algú t'ajudi, podràs fer la feina amb més facilitat)

Comparative sentences of equality

The comparative sentences of equality are used to indicate that two things are on equal terms. We express the comparison of equality like this:

- Affirmative statements: ...AS + adjective/adverb + AS...

- Negative statements: ...(NOT) SO + adjective/adverb + AS...

Here are a few examples:

- The son is *as nice as* the father (Cat. El fill és tan agradable com el pare)

- You can do it *as easily as* a child (Cat. Ho pots fer tan fàcilment com un nen)

- Working too much is *as bad as* doing nothin (Cat. Treballar massa és tan dolent com no fer res)

- The speech was *not so good as* I expected (Cat. El discurs no va ser tan bo com jo esperava)

- We did*n't* finish *so early as* you had promised (Cat. No vam acabar tan d'hora com m'havies promès)

Comparative sentences of inferiority

This type of comparative sentence is used to say that one thing is less than another. To separate the two terms of the comparison, we use *than*, like in the comparatives of superiority. We form the comparative sentences of inferiority like this:

- ...LESS + adjective/adverb + (THAN)...

Examples:

- This programme is *less difficult than* I thought (Cat. Aquest programa és menys difícil del que em pensava)

- With the economical crisis, we are *less rich* everyday (Cat. Amb la crisi econòmica, cada vegada som menys rics)

- I think the new CEO is *less intelligent than* the previous one (Cat. Crec que el nou president és menys intel·ligent que l'anterior)

- I would invest in a developed country. It's *less risky than* investing in developing countries (Cat. Jo invertiria en un pais desenvolupat. És menys arriscat que invertir en països en vies de desenvolupament)

Note: the comparative of inferiority is not very much used; when we need to establish a comparison, we tend to use the comparative of superiority.

The superlative sentences

The superlative sentences are used to compare one thing with all the others. As in the comparative forms of superiority, the adjectives and adverbs take a special form called the *superlative form*. The following tables show the superlative forms of adjectives and adverbs:

Adjectives:

TAULA 2.3. superlative forms (adjectives)

Type of word	Superlative form	Examples
One-syllable adjectives	THE -EST	*big > the biggest* (Cat. gran > el més gran)
Two-syllable adjectives ending in -y	THE -IEST	*happy > the happiest* (Cat. feliç > el més feliç)
Other adjectives	THE MOST + adjective	*intelligent > the most intelligent* (Cat. intel·ligent > el més intel·ligent)
Irregular adjectives		*good > the best* (Cat. bo > el millor)
		bad > the worst (Cat. dolent > el pitjor)

Note: one-syllable adjectives with a vowel + a consonant double the consonant when we add the ending -est: *big > the biggest*, *thin > the thinnest*, *fat > the fattest*, *mad > the maddest*, *red > the reddest*, etc

Adverbs:

TAULA 2.4. superlative forms (adverbs)

| Type of word	Superlative form	Examples
Adverbs ending in -ly	THE MOST + adverb	*easily > most easily* (Cat. fàcilment > el més fàcilment)
Other adverbs	THE -EST	*late > the latest* (Cat. tard > el més tard)
Irregular adverbs		*well > the best* (Cat. bé > el millor)
		badly > the worst (Cat. malament > el pitjor)
		far > the furthest (Cat. lluny > el més lluny)

Here are some examples of superlative sentences:

- Microsoft is one of *the most important* companies in the world (Cat. Apple és una de les empreses més importants del món)

- And Bill Gates is one of *the richest* people (Cat. I Bill Gates és una de les persones més riques)

- Talking to the manager was *the worst thing* you could do (Cat. Parlar amb el director és el pitjor que podies fer)

- Do it *the best* you can (Cat. Fes-ho el millor que puguis)

- She went *the furthest* she could go (Cat. Va anar el més lluny que va poder anar)

Summary of the comparative and the superlative sentences

We are going to compare the four boxes in the picture below in terms of size. To speak about the size of an object, we can use the adjectives *big* and *small*:

Figura 2.1. Comparative and superlative forms
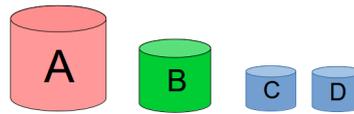
Now read these comparative and superlative sentences:

- Box A is bigger than boxes B, C and D.

- Box A is the biggest of the four.

- Box B is smaller than box A, but it's bigger than boxes C and D.

- Box C is as big/small as box D

- Box D is as big/small as box C

- Boxes C and D are smaller than boxes A and B

- Boxes C and D are the smallest of the four.

The relative clauses

The relative clauses are used to explain the characteristics of a noun. This noun is called the *antecedent* and it usually appears immediately before the relative clause. Here are some examples of relative sentences (the relative clause is in italics):

- I haven't sent the mail *that I've written in the morning* (Cat. No he enviat el mail que he escrit aquest matí)

- The restaurant *where we met is no longer there* (Cat. El restaurant on ens vam conèixer ja no hi és)

- Where's the person *who was waiting for me?* (Cat. On és la persona que m'estava esperant?)

- A job interview is the moment *in which you can explain your skills* (Cat. L'entrevista és el moment en el qual pots explicar les teves habilitats)

Now let's see the elements of a relative sentence. The following sentence will serve as an example: *We need a person who speaks English and German.*

- The main clause: *We need a person...*

- The relative clause: *...who speaks English and German.*

- The relative pronoun: *...who...*

The relative pronouns

The relative pronouns depend both on the noun it refers to (the antecedent) and on its function in the relative clause. Here is a list of the relative pronouns and their use:

TAULA 2.5. The relative pronouns

Relative pronoun	It is used when...
that	the antecedent is a person or a thing and it is the subject or an object of the relative clause
who	the antecedent is a person and it is the subject of the relative clause
whom	the antecedent is a person and it is an object of the relative clause
which	the antecedent is a thing and it is the subject or an object of the relative clause
whose	the antecedent is a person or a thing and it has the function of a possessive adjective
where	the antecedent is a thing denoting a place and it is an adverbial of place in the relative sentence
when	the antecedent is a thing denoting time and it is an adverbial of time in the relative sentence
why	the antecedent is the word *reason* (Cat. raó) and the relative sentence explains the reason of the main clause

As you can see, all the relative pronouns (except *that*) are the same as the interrogative pronouns.

You should know the following things about the relative pronouns:

1. The pronoun *that* can be used instead of *who* and *which*. It is mostly used in the spoken language.

2. *Whom* is only used in the formal written language. In speech, we normally say *that* or *who*.

3. *Which* can have a preposition (*in which*, *for which*, *about which*, etc.).

4. As *whose* has the function of a possessive adjective, it must go before a noun.

5. The antecedent *reason* is often omitted from the main clause: *This is (the reason) why I didn't go*

Omission of the relative pronoun

In speech, we often omit the relative pronouns *that*, *whom* (*who* in informal style) and *which*, but only when they are the object of the relative clause. For example:

- *This is the book that I bought* or *This is the book I bought*

- *Sarah is the girl whom I called last night* or *Sarah is the girl I called last night*

- *The video which we recorded has been lost* or *The video we recorded has been lost*

However, we cannot omit the relative pronoun in these sentences because it is the subject of the relative clause:

- *That's the book that became so famous last season*

- *Sarah is the girl who called last night*

- *Here's the video which explains how to deal with conflicts at work*

Types of relative clauses

We can distinguish two types of relative clauses:

1) *Defining relative clauses*: these clauses define or identify a noun. For example:

- The people who live next door are the Simpsons (Cat. La gent que viu a la porta del costat son els Simpson)

- Paris is a city which lies on the river Seine (Cat. París és una ciutat que està a la vora del riu Sena)

- That was the summer when we travelled to Austria (Cat. Aquest va ser l'estiu en que van anar a Àustria)

2) *Non-defining relative clauses*: these clauses do not define or classify, but only add some extra information about the noun. It is mostly used in the written language, always between commas (or in brackets). Here are some examples:

- Mr Branson, who has no experience, made many mistakes (Cat. Mr Branson, que no té gens d'experiència, va cometre molts errors)

- They say that sake, which I've never tasted, is quite a strong drink (Cat. Diuen que el sake, que jo no he provat mai, és una beguda bastant forta)

- Toronto, where I was in 1984, has grown a lot (Cat. Toronto, on jo vaig estar l'any 1984, ha crescut molt)

2.1.2 Communication

When looking for a job, it is essential to write a good curriculum vitae (or CV). The CV is called *resumé* (with the graphical accent) in American English. As part of the job searching procedure, it will also be necessary to write a cover letter, which usually accompanies the CV. Both the CV and the cover letter say a lot of things about the writer, so in order to cause a good impression on your potential employer, it is necessary to be very accurate and follow the conventions of this type of texts.

The final and most important stage in the job search is the interview, where you must show your oral skills and control your body language. The job interviews are often carried out in English, even if you are applying for a job in your own country, because a knowledge of English is one of the most important skills for many jobs.

Writing a curriculum vitae

You have probably learned that we must not judge people on first impressions. However, when an employer looks at a curriculm vitae (CV), he does precisely that: to judge a person on the first impression produced by the CV, without even knowing the candidate personally.

This is the reason why you should be very careful when you write a CV. It must convince the employer that you are the appropriate candidate for the job. With hundreds of other CVs waiting for an opportunity, the most important thing is that your own CV attracts the employer's attention. However, to attract the employer's attention does not mean to write your CV in a variety of colours and/or spectacular font types. This will only distract the reader from the important information. Instead, you should use a conventional format and organize your information clearly.

There are many different models, but the basic elements of all the CVs are:

- **Contact information:** your name and surnames should be prominent (usually centered and in bold type). Add your telephone number, your address and your e-mail address.

- **Work experience:** your relevant job experience should be listed chronologically, starting with your most recent job. For each job, you should mention the company and your job position.

- **Skills:** this section summarizes your personal skills and relevant achievements for the job. Here you should include your language and computer skills.

- **Education:** you must list your degrees, the school where you obtained them and the years you were in that school in reverse chronological order.

Curriculum vitae vs. resumé

The term *curriculum vitae* (or CV) is mostly used in BrE whereas AmE prefers the term *resumé* (spelt with the graphical accent).

You may also include any additional information that you think is important for the job (for example, courses you have attended). Except for the contact information, you must include the title of each section, in bold type or capital letters.

Here is a list of things that **should not** appear in a CV:

- **Errors:** making grammatical and/or spelling mistakes in a CV is the worst thing that can happen to a candidate for a job. The employer will immediately relate the mistakes to the candidate's carelessness and he/she will be obviously discarded.

- **Salary:** do not include your current salary or that which you expect to earn. Salary negotiations usually take place during the interview.

- **Irrelevant information:** you should only include the information that is relevant for the job and that can benefit your interests. For example, do not include an average mark in a course if it is not a good one or hobbies that have nothing to do with the job.

If you have little or no work experience, you can list your school and social activities and link them to the job you are applying for.

Writing a cover letter

A CV should always go with a cover letter. A cover letter is a formal letter where you explain why you are the ideal candidate for the job. Cover letters have no special format. They follow standards applied to all the other formal letters.

In a cover letter, you should include the most relevant aspects of your experience and education for the post. To do that, you must select the aspects from the CV that can contribute to raise the company's interest in your application.

Here are some useful expressions which you can use in a cover letter:

- *I am writing to you in response to your advertisement for the post of...* (Cat. Li escric en resposta al seu anunci per a la feina de...)

- *As you can see from my enclosed CV, my experience and qualifications match this position's requirements* (Cat. Com pot veure al currículum que adjunto, la meva experiència i qualificacions es corresponen amb els requisits de la feina).

- *I would like to point out that...* (Cat. Voldria indicar que...)

- *I look forward to an opportunity to speak with you in person* (Cat. Espero tenir l'oportunitat de parlar amb vosté personalment).

Equivalence between the academic degrees in the Spanish and the British school systems

The Spanish and the British academic degrees belong to different school systems. Therefore, it is not possible to make a literal translation of your degrees. We must find the equivalent degree in the foreign school system.

The following table shows the equivalence between the Spanish and the British academic degrees.

TAULA 2.6. Academic degrees

Spanish school system	Brititsh school system
Educació Primària / Educació General Bàsica (EGB)	Primary Education
Educació Secundària Obligatoria (ESO) / Batxillerat Unificat Polivalent (BUP)	General Certificate of Secondary Education (GCSE)
Batxillerat / Curs d'Orientació Universitària (COU)	General Certificate of Education (GCE)
Cicle Formatiu de Grau Mitjà (CFGM) / Formació Professional de Primer Grau (FPI)	Vocational Education and Training (VET)
Cicle Formatiu de Grau Superior (CFGS) / Formació Professional de Segon Grau (FPII)	Certificate of Higher Education (HNC)
Diplomatura (3 anys)	Bachelor's Degree (B)
Llicenciatura / Grau	University Degree
Enginyeria Tècnica	Diploma of Higher Education (DipHE)
Enginyeria Superior	Engineer's Degree / Engineer Diploma (DI)
Postgrau (de 30 a 60 crèdits ECTS)	Graduate Certificate (PGCert)
Màster (de 60 a 120 crèdits ECTS)	Master's Degree (M)
Doctorat	Doctorate (PhD)

You can use a general term to describe the vocational studies. For example:

- *Business Administration and Finance* (Cat. Administració i finances)

- *Secretarial Studies* (Cat. Secretariat / Assistència a la direcció)

- *Commerce* (Cat. Gestió Comercial / Gestió de vendes)

- *International Commerce* (Cat. Comerç Internacional)

Preparing your job interview

If the employer has considered your CV, he/she will call you for the job interview. This is the time when you meet the employer so he/she can find out more things about you. The interview may take place in a face to face meeting or online via Skype or any other videoconference program. In any case, the interviewer will ask you about your experience and qualifications, and you will also need to show your skills for the job.

Here are some tips to help you before going to a job interview.

1. Prepare your answers in advance. Think about the questions they employers frequently ask in a job interview and prepare your answers in advance.

Some frequent questions in job interviews

These are commonly-asked questions in job interviews:

- What can you say about yourself?

- Why do you think you are good for this job?

- What are your weaknesses?

- Why do you want to work in our company?

- What salary do you expect to earn?

- What are your motivations?

- What makes a good team, according to you?

- Have you got any questions?

2. Make some research. Before going to the interview, look at the potential employer's website and check the company's details. Having the information will help you in the interview.

3. Have a good appearance. First impressions are very important, so make sure that you wear smart clothes and have a nice appearance.

4. Be ready. Try to get to the interview with plenty of time. If you get late, you will be doubly stressed and, besides, it will cause a very bad impression. Make sure that you have everything that you need: notebook, pen and a copy of your CV.

5. Show your good character. Although you will probably feel nervous, try to smile all the time. This will help you feel more relaxed and will give a good impression. Make sure that you look your interviewer directly in the eye, and concentrate on what he/she is saying.

6. Ask questions. Do not tell the interviewer that you do not have any questions. You should prepare some questions in advance and be ready to ask them if they tell you so.

Questions that you may ask in a job interview

Here are some questions that you may safely ask in a job interview:

- Why do you need to fulfill this position?

- What are the objectives of this position?

- How do you expect to meet the objectives?

- What can I expect from you in terms of development and support?

- What do you do to create a good atmosphere at work?

- Are there any plans for expansion?

- What does the company expect from the employees?

7. Take notes. Taking notes will give the impression that you are paying attention and that you are very interested in what the interviewer is saying.

3. Looking for a job

"If you love the job, the job will love you."

Society has changed a lot over the last few years. Nowadays unemployment is a big problem, and some people decide to move to other countries in order to find a job. It is not easy, and it is necessary to do a lot of research.

There are three main steps to take when looking for a job: writing your CV or resume, writing a cover letter, and going to the job interview.

These are some hints to prepare your resume: start your resume with a good objective statement that indicates your key competencies. Mention your qualifications which will be helpful to perform this job efficiently. List your work experience in reverse chronological order. If you do not have any relevant experience, include any position you occupied (internship or summer job, etc.) which might have some relevance to this position.

In the "Interesting links" section you will find some websites with information about jobs in the UK.

Here is an example:

Curriculum Vitae

Name and surnames: Marc Garcia Torres

Address: Av. Paral·lel, 71 08004 Barcelona

Telephone Number: 666 222 333

Objective

To work in a position that will allow me to use my experience working with electricity.

Experience

Electrician:

February-August 2014, Electric Home, Barcelona

- Connection of wires to circuit breakers, transformers or other components.

- Inspection and testing of electrical systems, equipment and components to identify defects.

- Advising management on the state of installations to meet governmental regulation.

- Directing and training apprentice to assist in the installation and maintenance of electrical wiring.

Electrician:

January 2008-September 2012, Five Star Electric, Rubí

- Electrical installation, maintenance and repairs of electrical wiring, equipment and fixtures.

- Testing electrical systems

- Ensuring that electrical installations are in accordance with relevant codes.

- Diagnosing malfunctioning systems, apparatus and components.

Electrician apprentice:

June 2002-November 2007, Sparks Centre SA, Barcelona

- Assisting in installation and maintenance works.

- Locating short circuits in wiring using multimeter.

- Assisting in conduit layout design and cabling.

- Interpreting circuit diagrams.

- Participating in all electrical activities conducted by the electrician.

Education

- Certificate of Secondary Education (CSE) at "Institut Emperador Carles", Barcelona

- Certificate of vocational studies on Electricity and Electronics, at "Institut Obert de Catalunya" (IOC), (distance learning)

- Course on Euro Standard Electrical Installations and Safety, at "Willow Vocational School", London

Skills

- Ability to work on a broad range of systems and facility types.

- Outstanding communication and interpersonal skills, good team member.

- I enjoy keeping up to date with the latest technology.

Hobbies

- Travelling, mountain climbing, interest in the latest technology.

Storyline

The workload is increasing every day and Jordi has decided to take on a new assistant. He is going to interview Marc, a boy who submitted his CV to apply for a job in the company.

Marc: Good morning. I'm Marc, I came for the job interview.

Jordi: Good morning, Marc. Welcome to our office. I have your CV and your cover letter with me. I see that you are interested in working with us.

Marc: Yes, I am.

Jordi: Could you tell me a little about yourself?

Marc: I live in Barcelona. I'm a trained and skilled technician. I have worked as an electrician for many years in different companies.

Jordi: Why did you leave your last job and why do you want to work in our company?

Marc: I resigned voluntarily from my last job because I want to advance in my career. I'm interested in working for your company because your advertised position will allow me to grow as a person and as a professional technician.

Jordi: Can you handle a project without supervision? I need someone that can take care of the job without my help, because I'm very busy at the moment.

Marc: Of course, I'm well prepared for this job and I'm interested in working for your company. As you can see in my CV, my experience proves that I'm a teamplayer and a leader, who can work independently or in a group.

Jordi: Can you work under pressure?

Marc: Yes, as a technician, I have been trained to work under pressure to resolve issues.

Jordi: Let's talk about salary. What salary are you expecting?

Marc: I think someone with my experience should get between 1,700 to 2,000 euros, but nothing is more important for me than the job.

Jordi: Ok, Marc. I'll put you in a 3-month probation. If I'm satisfied, then I will give you a one year contract.

Marc: Thank you.

3.1 Vocabulary

- **Unemployment**: atur

- **Research**: recerca

- **Cover letter**: carta de presentació

- **Job interview**: entrevista de feina

- **Hint**: consell

- **Objective statement**: objectius

- **Key competency**: competència clau

- **Qualifications**: titulació

- **Relevance**: importància, rellevància

- **To meet governmental regulations**: complir amb la normativa

- **Electrical wiring**: cablejat

- **Fixture**: làmpada (element d'il·luminació)

- **Short circuits**: curtcircuits

- **Vocational studies**: estudis de formació professional

- **Broad range of systems**: àmplia gamma de sistemes

- **Team member**: membre d'un equip

- **Keep up to date**: estar al dia

- **Workload**: càrrega de feina

- **Take on**: contractar

- **Apply for a job**: sol·licitar una feina

- **Resign voluntarily**: plegar voluntàriament

- **Career**: vida professional

- **Advertised position**: lloc de treball anunciat/publicitat

- **Handle a project**: gestionar un projecte

- **Under pressure**: sota pressió

- **3-month probation**: període de prova de 3 mesos

3.1.1 Grammar

The conditional sentence is a type of complex sentence composed of a main clause and a subordinate clause. It expresses the action that takes place if a condition is fulfilled. The characteristics of the conditional sentences are these:

- The subordinate clause expresses the condition and the main clause describes the action that takes if the condition is fulfilled (the result).

- The subordinate clause (or conditional clause) is normally introduced by the word 'if' (Cat. si).

There are four types of conditional sentences:

- Zero-conditional: for example, *if you drop a stone, it falls* (Cat. si deixes anar una pedra, aquesta cau a terra).

- First conditional: for example, *if he comes, I will call you* (Cat. si ve, et trucaré).

- Second conditional: for example, *if he came, I would call you* (Cat. si vingués, et trucaria).

- Third conditional: for example, *if he had come, I would have called you* (Cat. si hagués vingut, t'hauria trucat).

In the present course, we are only going to study the first and the second conditionals, which are the most widely used forms. The first and the second conditionals have the same syntactical structure (because they are both conditional sentences), but there is a difference in the verb tenses and, obviously, in the meaning.

The first conditional

We use the first conditional to express real conditions. This means that, in the speaker's opinion, the situation will probably happen.

The structure of the first conditional sentences is the following:

- IF + SUBJECT + VERB (in present simple), SUBJECT + WILL + VERB (in the base form) + ...

Here are some examples of first conditional sentences:

- If you *don't save* your files, you *will lose* all your work (Cat. si no guardes als arxius, perdràs tota la feina).

- If you *practise* a lot, you *will speak* English fluently (Cat. si practiques molt, parlaràs anglès amb fluïdesa).

- If you *do* all the activities, you *will pass* the exam with no problems (Cat. si feu totes les activitats, aprovareu l'examen sense problemes).

Notes:

1) We can change the order of the main clause and the conditional clause without any change in the meaning, but we must write a comma if we put the conditional clause in the first place:

- *If you practise a lot*, you will speak English fluently.

- You will speak English fluently *if you practise a lot*.

2) Apart from 'will', we can use other modal verbs in the main clause of the first conditional sentences. For example:

- If you practise a lot, you *may* speak English fluently (Cat. si practiques molt, *és possible que* parlis anglès amb fluïdesa).

- If you *can* do it, I will be very grateful (Cat. si ho *pots* fer, estaré molt agraït).

- If he says anything, you *shouldn't* respond (Cat. si diu alguna cosa, tu *no hauries* de respondre).

3) In the main clause, we can also use the imperative form:

- If you notice a fire, *go out* immediately (Cat. si detectes foc, *surt* de seguida).

- If you have problems, please *tell* me (Cat. si tens problemes, si us plau *digues*-m'ho).

The second conditional

We use the second conditional to refer to unreal or hypothetical situations, or about conditions that are impossible that are fulfilled (for example: *if I were you...*, *if I were younger...*, *if I were a dog...*, etc.), we must also use the second conditional.

The structure of the second conditional sentences is the following:

- IF + SUBJECT + VERB (in past simple), SUBJECT + WOULD + VERB (in the base form) + ...

Examples:

- If I *had* enough time, I *would go out* more (Cat. si tingués prou temps, sortiria més).

- If I *were* the director in this company, I *would raise* the workers' salaries (Cat. si jo fos el director d'aquesta empresa, apujaria el sou dels treballadors).

- If I *were* you, I *would be* more polite to customers (Cat. jo en el teu lloc seria més amable amb els clients).

Notes:

1) In the second conditional clauses, the form of the verb 'to be' is 'were'for all persons (*if I were you ...*). The form 'was' is not generally accepted, except in the informal spoken language, where it is possible to say: *If I was you ...*. In most situations, however, the form is 'were'.

2) Apart from the verb is the past simple tense and the modal verb 'would', in the second conditional we can use some modal verbs, but they must refer to the past when the modal verb has time distinction:

- If I had enough time, I *could* go out more (Cat. si tingués prou temps, *podria* sortir més).

- If I were the director, I *might* rise the salaries (Cat. si fos el director, *podria ser que* pugés els salaris).

- If I *could* be you, I would be more polite (Cat. si jo *pogués* estar en el teu lloc, seria més amable).

> The use of the first or second conditional sentence very often depends on the context or on the subjective perception of the speaker. Compare these sentences:
>
> - First conditional: *if it rains tonight, I will stay at home* (Cat. si plou aquesta nit, em quedaré a casa). The meaning is: it is very cloudy, so it is very probable that it rains.
>
> - Second conditional: *If it rained tonight, I would stay at home* (Cat. si plogués aquesta nit, em quedaria a casa). The meaning is: It is sunny now, so it is not probable that it rains, but there is a possibility.

3.1.2 Communication

In this section, we are going to study three common communicative situations: suggestions (Cat. suggeriments), advice (Cat. consells) and requests (Cat. requeriments, peticions, demandes). Suggestions and advice are very similar and we can generally use them in the same situations. The speaker can be included

in a suggestion *we*), for example, when you suggest doing something with other people; however, a piece of advice is always addressed to a second person (*you*). A request is a little different. In a request you ask other people to take specific actions.

We may need to use these three communicative tools in our daily and working lives because they are very common, so we should learn when and especially how to use them.

Making suggestions

Here are some ways of making and responding to suggestions

Making suggestions

There are different ways of making suggestions. They are all valid, but sometimes we may need to use a specific one rather than another. Here is a list of the verbs and expressions used to make suggestions, with their corresponding syntactical structures:

1) **Suggest** (Cat. suggerir). This verb has three different syntactical structures:

- SUGGEST + VERB in -ING: *I suggest speaking in English* (Cat. suggereixo parlar en anglès).

- SUGGEST + THAT-CLAUSE: *I suggest that we speak in English* (Cat. suggereixo que parlem en anglès).

- SUGGEST + NOUN: *I suggest a Japanese restaurant* (Cat. suggereixo un restaurant japonès).

> *suggest* **with indirect object**
>
> If you want to indicate the person whom the suggestion is addressed, you must use the structure *to + object pronoun* or the *that-clause*, and not the object pronoun. For example:
>
> - *I suggest a Japanese restaurant **to you*** (Incorrect: *I suggest ~~you~~ a Japanese restaurant*)
>
> - *I suggest **that you** speak in English* (Incorrect: *I suggest ~~you~~ to speak in English*)

2) **Recommend** (Cat. recomanar). We can use this verb in four ways:

- RECOMMEND + VERB IN -ING: *The doctors recommend walking one hour every day* (Cat. Els metges recomanen caminar una hora cada dia).

- RECOMMEND + INDIRECT OBJECT + TO + INFINITIVE: *I recommend you to go home* (Cat. Et recomano que vagis a casa).

- RECOMMEND + THAT-CLAUSE: *I recommend that you speak in English* (Cat. Et recomano que intentis parlar en anglès).

- RECOMMEND + NOUN: *She recommended a private teacher* (Cat. Ella va recomanar un professor particular).

3) **Let's**:

- LET'S + VERB (in the base form): *let's speak in English!* (Cat. anem a parlar en anglès!).

The form *let's* (=let us) is always written in the contracted form. It is used informally to make a suggestion the includes the speaker + one or more people.

4) **What about...?**:

- WHAT ABOUT + VERB in -ING...?: *what about speaking in English?* (Cat. què tal si parlem en anglès?).

5) **Why don't you/we...?**:

- WHY DON'T YOU/WE + VERB (in the base form)...?: *why dont we speak in English?* (Cat: per què no parlem en anglès?).

6) **You/We can...**:

- YOU/WE CAN + VERB (in the base form): *you can speak in English* (Cat. pots parlar en anglès).

7) **You/We could...**:

- YOU/WE COULD + VERB (in the base form): *you could speak in English* (Cat. podries parlar en anglès).

Responding to suggestions

We can respond to suggestions in different ways, which usually depend on whether we agree or disagree with the suggestion.

The following table shows different ways of responding to a suggestion.

I'm afraid ...

If we disagree with a suggestion, we should use this expression. It is used to soften the negative idea and show that you are not angry.

TAULA 3.1. Responding to suggestions

To agree	To disagree
Yes, we could do that	I'm afraid it's not a good idea
Yes, that's a good idea	I'm afraid we can't do that
Ok, let's do that	I'd rather not
Yes, why not?	No, we can't do that, I'm afraid
Ok, that's great!	No, we shouldn't do that

> When you disagree with a suggestion, the social etiquette requires to explain the reason of your disagreement:
>
> - A: Why don't we go to a restaurant?
>
> - B: No, we can't do that. *We have no time and no money*.

Giving advice

As when making suggestions, we can give other people advice with a variety of verbs and expressions.

Giving advice

> The noun 'advice' is uncountable in English. This means that it has no plural form and we cannot say the indeterminate article 'an' or the numeral 'one'. It's wrong to say: ~~I'll give you an advice~~. We must say: *I'll give you advice*, *I'll give you some advice* or *I'll give you a piece or advice*.

The verb "advise" (Cat. aconsellar, donar consell). There are two different syntactical structures with this verb:

There is a difference in spelling between the noun (advi**c**e) (Cat. consell) and the verb (advi**s**e) (Cat. aconsellar). The pronunciation is also different: *-c-* sounds like /s/ and *-s-* sounds like /z/. See Annex 'Phonetic Alphabet' for a description of the sounds /s/ and /z/.

- ADVISE + GERUND

- ADVISE + INDIRECT OBJECT + TO + INFINITIVE

Examples:

- *He advised getting up earlier* (Cat. Va aconsellar llevar-se més d'hora).

- *We advise you to see a doctor* (Cat. T'aconsellem que vagis al metge).

Should. The modal verb 'should' is the most common way of giving advice in English. The correct structure is:

- SHOULD + INFINITIVE (without 'to')

Examples:

- *You should work hard* (Cat. Hauries de treballar molt).

- *You should save money* (Cat. Hauries d'estalviar diners).

- *He should go back to school* (Cat. Ell hauria de tornar a estudiar).

When we use 'should' to give advice, it is very common to add: *I think (that)* ...:

- *I think that you should work hard* (Cat. Crec que hauries de treballar molt).

Had better. The expression 'had better' is used when we want to give advice in a stronger way. The structure of this type of sentence is:

- HAD BETTER (NOT) + INFINITIVE

Examples:

- *You had better work harder* (Cat. És millor que treballis molt).

- *We had better go* (Cat. El millor és que marxem).

- *He had better speak* (Cat. El millor és que ell parli).

This expression is mostly used in informal spoken English, where 'had' is often contracted or is omitted:

- *You'd better work harder* or *You better work harder*

- *We'd better go* or *We better go*

'If I were you, ...'. This is a second conditional clause, so the correct structure is:

- IF I WERE YOU, + I + WOULD + INFINITIVE

Examples:

- *If I were you, I would work hard* (Cat. Si jo estigués en el teu lloc, treballaria molt).

- *If I were you, I would save money* (Cat. Jo, en el teu lloc, estalviaria diners).

Responding to advice

When responding to advice, we can decide to take the advice or we can reject it. In both cases, it is customary to thank the other person for his/her advice. If we decide to reject it, we should add some type of 'excuse'. Here is a short list of possible ways of responding to advice:

TAULA 3.2. Responding to advice

To accept	To reject
Thank you, I'll do that	I'd rather not do that. Thanks anyway
Good idea! Thank you	Thank you. but I'm afraid I can't do that
Excellent! Thanks for your advice	Oh, no. That's not possible, I'm afraid

Here is an example of how to reject a piece of advice appropriately:

- A: *If you want to improve your English, you should go to England*

- B: *Thank you, but I'm afraid I can't do that. Going to England is too expensive for me right now*

Making requests

A request is very much like an order or command. In fact, an order is the strongest way of making a request. We make requests with a variety of modal verbs. Their choice depends on the degree of formality.

Making requests

In all these sentences, we make the same request (to open the window), but we use an increasing degree of formality:

1. *Open the window!* (Cat: Obre la finestra!)

2. *Can you open the window?* (Cat: Pots obrir la finestra [si us plau]?)

3. *Could you open the window?* (Cat: Podries obrir la finestra [si us plau]?)

4. *Will you open the window?* (Cat: Obriràs la finestra [si us plau]?)

5. *Would you open the window?* (Cat: Obriries la finestra [si us plau]?)

6. *Do you mind opening the window?* (Cat: T'importa obrir la finestra [si us plau]?)

7. *Would you mind opening the window?* (Cat: T'importaria obrir la finestra [si us plau]?)

Notes:

- Example 1 is made with the imperative form (*open!*). This is actually an order.

- Most of the sentences are made with a modal verb (*can*, *could*, *will* and *would*). This means that the verb must go in infinitive (*open*)(examples 2-5).

- The verb *mind* is always followed by a gerund (*opening*) (examples 6 and 7).

- Very often, we add the word *please* to soften a request.

- All the examples, except 1, take the form of a question. In writing, we must not forget to write the question mark (?) at the end.

The position of *please*
If we use the word *please* to soften our request, we can place it in different positions. Here are examples with the most common positions of the word *please*:

- ***Please**, open the window!* or *Open the window, **please**!*

- *Can you **please** open the window?* or *Can you open the window please?*

Responding to requests

There are different ways of responding to requests. Here are some examples:

- **Accepting the request**:

- *Yes, of course*

- *Ok, no problem*

- *Yes, of course I (can)* (the modal verb in the reply must be the same as that in the request)

- *Of course I don't mind*

- *Certainly*

- *Sure*

- **Rejecting the request**:

- *I'm sorry, but I can't (I'm on the phone right now)*

- *I'm afraid I can't (it's too cold in here)*

As when responding to a suggestion or a piece of advice, we should explain why we reject a request by giving some 'excuse'.