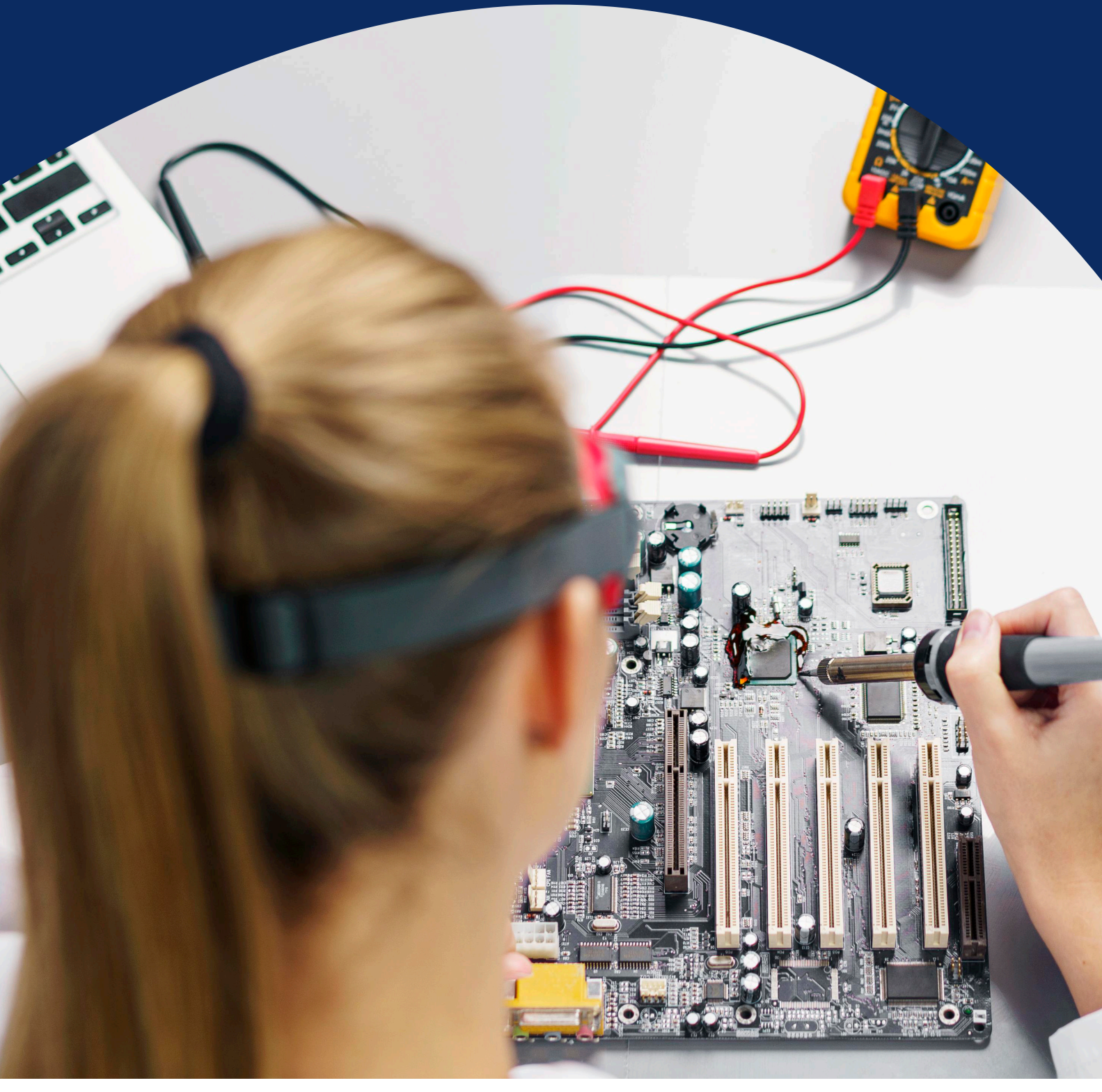
María Sanglada Argiles

educàlia editorial

English for MECHATRONICS



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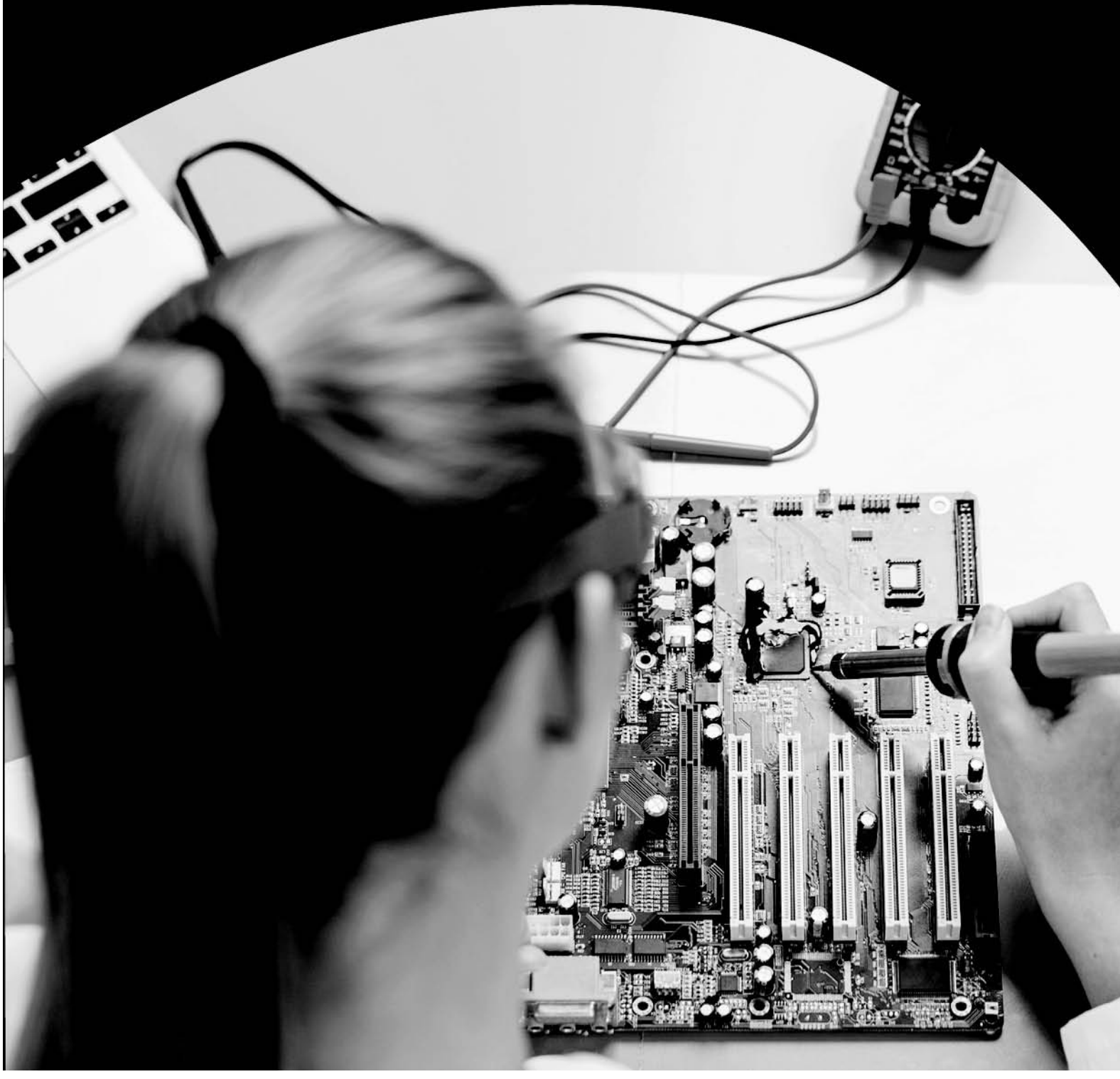
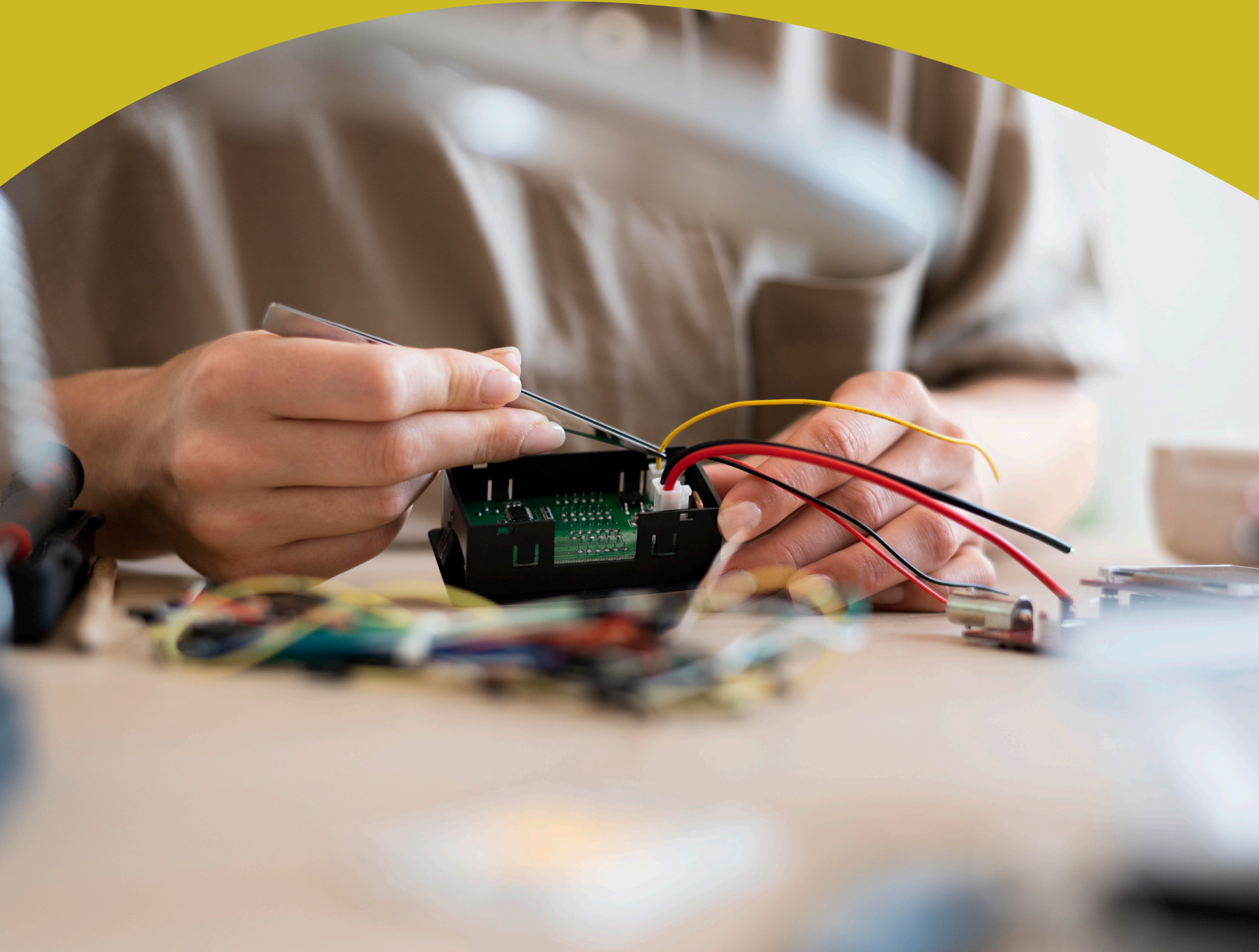


	VOCABULARY	GRAMMAR	READING
1 What's mechatronics?	• Mechatronics disciplines	• Present simple. • Frequency adverbs and expressions of frequency.	• A day in the life of a mechatronic technician
2 Mechanics I	• Materials and properties. • Mechanical components	• Present continuous. • Describing pictures: prepositions, there is/are.	• The world is changing: The 4th industrial revolution. • Types of materials
3 Electricity and electronics	• AC vs DC (Tesla vs Edison) • Electric circuits. • What's electronics?	• Past simple. • In/on/at	• The war of the currents. • What's electronics?
4 At the workshop I	• Different tools for different workshops. • Verbs used with the tools. • Mechanical fasteners	• Used to/for. • zxPast continuous	• Mechanical fasteners
5 Mechanics II	• Mechanical systems. • Hydraulics and pneumatics. • How a lift works.	• Present perfect. • Yet, just, already.	• Mechanical systems. • Hydraulics and pneumatics. • How a lift works.
6 Technical drawing	• Technical drawing. • Computer-aided design (CAD)	• The future (be going to, present continuous) • The future: (Will)	• Technical drawing. • Computer-aided design (CAD)
7 Automation and robotics	• The assembly line. • Robots and roboticS.	• Review of verb tenses. • Something, anything, nothing…	• Ford's assembly line starts rolling. • Robots and robotics.
8 At the workshop II	• Machine tools. • PPE and safety rules at the workshop. • Types of machining.	• Modal verbs. • Imperative.	• Machine tools. • Types of machining
9 Maintence and quality management	• Maintenance and quality management. • Phrasal verbs	• Quantifiers.	• Intro to maintenance and quality management. • Poka yoke, the art of error-proofing.
10 Manufacturing processes	• Manufacturing processes. • Inventions (machines	• The passive voice.	• Manufacturing processes. • The car manufacturing process.

LISTENING	WRITING	SPEAKING	GO FURTHER
• What's mechatronics? • Alex's hobbies. • Mechatronic youtubers	• A day in your life	• Introductions. • Mechatronic youtubers.	• Do you feel like starting your own project?
• Mechanical component	• Describing images	• Describing pictures. • Materials or components?	• New materials. (speaking)
• Electric circuits. • 10 incredible Nikola Tesla inventions to blow your mind	• Other geniuses (biographies)	• Let's talk about the past. • Electronic gadgets that changed the world.	• The Faraday Cage. (speaking)
• Ordering fastenerS	• Emails	• Split crossword: describing tools. • Explain yourself: What were you doing?	• Building the dream Workshop. (video-listening)
• The internal combustion engine. • Other systems.	• Have you ever...? (Present perfect vs past simple)	• Have you ever...? • How mechatronic systems work.	• Mechanisms for converting Rotational Motion into linear motion. (listening & speaking)
• Technical drawing. • Future trends of CAD systemS	• "CAD Blueprint Descriptions"	• Let's talk about the future.	• Explain your creation. (speaking)
• History of automation in manufacturing.	• Weird robots. My favourite one... (description)	• General knowledge quiz. • Charles Chaplin – The assembly line (video and debate	• Can you explain these projects? (speaking)
• PPE and safety rules at the workshop. • Guess the machine tool.	• Tell me how to...(giving instructions)	• What do these signs mean? • You're the teacher now.	• Satisfying CNC working processes (speaking)
• Maintenance and quality management. • Poka yokes.	• A quality maintenance report.	• Tell me about your lifestyle. • Can you troubleshoot?	• What does a quality inspector do? (video)
• Incredible inventions. • How things are made.	• Applications of the 3D printer.	• True or false (general knowledge) • How things are made.	• Crazy inventions. (listening and speaking

1 WHAT'S MECHATRONICS?



INTRODUCTIONS

1. Fill in the gaps and and answer the questions in pairs.

- What .....your name?
- Where..... you from?
- Where do you .....?
- Do you .....any brothers or sisters?
- Do you ..... any pets?
- What ..... something unique about yourself?
- Do you ..... any hobbies?
- What do you usually .....in your free time?
- Do you ..... any sport or go to the gym?
- Do you ..... any favorite songs or artists?
- What .....your favorite books, movies, or TV shows?
- How often do you ..... clubbing?

.....

- What area of mechatronics are you most passionate about?

.....

- Are you comfortable with technology?

.....

- Have you ever worked in a team? How was the experience?

.....

- What are the latest advancements in mechatronics that you find interesting?

.....

- Can you speak any other languages? Which?

.....

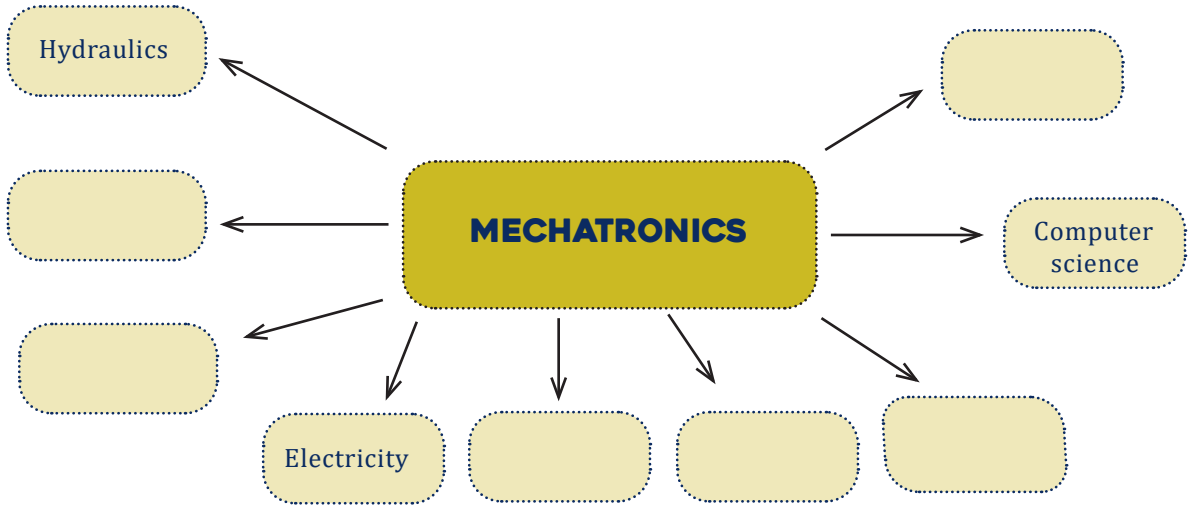
- Can you think of any more questions?

.....

2. What did your partner tell you? Tell the class.

WHAT'S MECHATRONICS?

1. Mechatronics is a multidisciplinary field that includes...



2. Here you can see five definitions of "mechatronics" made by five technicians. Complete the definitions with words from the box.

mechanics	sense	developes	automated systems	tasks	components

1. It's a discipline that combines mechanical and electrical principles to create robots and .....
2. It is about building machines that can ..... think, and act using a combination of mechanical and electronic components.
3. It involves the integration of mechanical ....., electronic sensors, and computer control systems to find innovative solutions for a wide range of industries.
4. It designs and .....machines that can perform precise actions automatically and smartly.
5. It's a field that combines....., electronics and computer science to create smart machines that can sense their environment, make decisions, and perform ..... with efficiency.

3. TRACK 1. Now listen to the technicians to correct your sentences.

4. What's mechatronics for you? Can you share an example of a mechatronic system that impressed or inspired you?

1 VOCABULARY & LISTENING

5. How much do you know about mechatronics? Work in pairs. Can you classify each of the following words into their respective mechatronics fields?

gears	control	circuits	fluids	pressure	valves	compressor	voltage
resistance	programming	data structures	air cylinders	artificial intelligence		friction	current
manipulators	solenoid valves	algorithms	transistors	sensors	actuators	diodes	motion

Mechanics	Electronics	Electricity	Hydraulics	Pneumatics	Automation	Robotics	Computer Science

6. Mechatronic systems are devices that have fewer mechanical parts because of the integration of sensors, circuits, information technology and motion components such as actuators. Mechatronic systems are typically those that can respond and react to the external environment on their own. Can you identify the following mechatronic systems?

READING 1

A DAY IN THE LIFE OF A MECHATRONIC TECHNICIAN

Meet Alex, a skilled mechatronic technician who works in the cutting-edge field of mechatronics. In this text, Alex will walk you through a typical day at his job.

Hello, everyone! My name is Alex, and I am a mechatronic technician. Mechatronics is a fascinating field and as a mechatronic technician, my main responsibility is to ensure that complex systems function smoothly in my company.

Every morning, I arrive at my workplace, a high-tech manufacturing plant, filled with machines and robots busy at work. My day usually starts with a short meeting with the engineering team to discuss tasks for the day. We speak about plans for building and maintaining mechatronic systems, such as robotic arms, automated assembly lines and machinery.

For example, today it's time to get dirty with a robotic arm that's not working properly. I examine the components, check the wires, and run some tests. Bingo! I find out it's just a worn-out gear, so I replace it for a new one. The robot's back in the game, and I am the hero!

One of the things I love most about my job is that every day is different. On a normal day, I can troubleshoot a malfunctioning robotic arm, programme a PLC to control a production line, or calibrate sensors to ensure precise measurements. Each project presents unique challenges, where problem-solving skills are essential.

Mechatronics is at the forefront of technological advancements, so continuous learning is an important part of being a mechatronic technician. Attending workshops, reading research papers, and collaborating with colleagues keeps me informed and ready for new challenges.

1. Answer these questions about the text:

1. What is the main responsibility of Alex as a mechatronic technician?

2. Where does Alex work?

3. What are some examples of mechatronic systems that Alex deals with in his job?

4. Why does he like his job?

5. Why is continuous learning important in his profesion?

2.Match the highlighted words in the text with their definitions:

1. cutting-edge:	worn or used with no possible repair
2. assembly lines:	innovative
3. worn-out	abilities or experience to do something well
4. (to) troubleshoot	(to) identify a problem and find a solution
5. skills	meeting designed to develop a skill or technique
6. workshops	arrangement of machines..in which a product is assembled as it is moved along a line

PRESENT SIMPLE

We use present simple to speak about something that happens regularly in the present (routines) or for things which are generally true.

- I work in a factory, but my brother works in a bank.
- It rains a lot in winter.
- Do they always have breakfast?
- The baby has a shower every day.
- My car doesn't use much petrol.
- What kind of books does he normally read?

AFIRMATIVE	NEGATIVE	INTERROGATIVE
I play	I don't play (do not play)	Do I play...?
You play	You don't play (do not play)	Do you play...?
He plays	He doesn't play (do not play)	Does he play...?
She plays	She doesn't play (do not play)	Does she play...?
It plays	It doesn't play (do not play)	Does it play...?
We play	We don't play (do not play)	Do we play...?
You play	You don't play (do not play)	Do you play...?
They play	They don't play (do not play)	Do they play...?

SHORT ANSWERS.

Yes	I, we, you, they do
	he, she, it does
No	I, you, we, they don't
	he, she, it doesn't

finish > finishes
study > studies
do > does
have > has
watch > watches
try > tries
go > goes

Pay attention to the word order in questions:

Question word	Auxiliar	Subject	Infinitive	
	Does	this computer	work?	
	Do	you	work	on Saturdays?
Where	does	your brother	live?	
How often	does	she	go	to the gym?
How much	does	that machine	cost?	

Remember that some verbs ("to be", "can"...) make the positive, negative and interrogative in a different way! You can learn it on these web pages: https://lingokids.com/english-for-kids/verb-can & https://lingokids.com/english-for-kids/verb-to-be

In English, there are two types of questions: Yes/No questions and Wh– questions:

- Yes / No questions have only two possible responses: "yes" and "no". These questions start with an auxiliary verb, the verb «to be» or a modal verb. Examples:
  - » Did you work last night? Yes, I did.
  - » Are you ready to go? No, I'm not.
  - » Can I go out tonight? Yes, you can.
- Wh- Questions start with a question word (i.e. what, where, when, etc.) Examples:
  - » Where were you when I called you? I was at the cinema.
  - » How did you get home last night? A friend gave me a lift.
  - » How many tools are there in the toolbox? There are several.

Other question words are: which, when, who, whose, why.....

GRAMMAR 1

1. Complete the sentences with verbs in present simple ("to be and "can" included):

1.Alex's day usually …… with a short meeting. (start)

2.……mechatronics a fascinating world for you? (be)

3.……you ……an interesting job? (have)

4.We don't usually …… workshops very often. (attend)

5.Ana also …… in a hig-tech manufacturing plant. (work)

6.I can speak English, but I ……speak German. (can't)

7.He …… to replace the gear for another one. (have)

8.These machines are expensive. They …… a lot of money. (cost)

2. Write questions and answer them about yourself:

1. you / watch TV / in the evening ?

.....

.....

2. your friends / like / playing computer games?

.....

.....

3. you / study / on Saturdays ?

.....

.....

4. your father / work / in a garage?

.....

.....

5. your best friend / be / from Valencia ?

.....

.....

6. you / can play / an instrument ?

.....

.....

3. Make the correct questions for these answers:

1. .....?	My parents live in Manchester.
2. .....?	I go shopping once a month.
3. .....?	Yes, she does.
4. .....?	Yes, he is.
5. .....?	My friend usually gets up at 7.
6. .....?	No, I can't.

4. Translate the following sentences:

1. ¿Cuánto cuesta este coche? .....
2. Estudio inglés todos los días. .....
3.Mi trabajo no es muy interesante. .....
4. Tom no hace su trabajo muy bien. .....
5. ¿Puedes dejarme 30€? .....
6. Empezamos las clases antes de las 9. .....
7.¿A qué se dedican tus padres? .....
8. Susan trabaja en una fábrica. .....
9. ¿Puedo usar tu teléfono? .....
10. A Alex le gusta trabajar con robots. .....

1 LISTENING

ALEX'S FREE TIME

1. TRACK 2. You will hear Alex talk to a friend, Sarah, about how they spend their free time. Listen carefully to Alex's descriptions and choose the best option for each question.

1. What does Alex enjoy doing in his free time?

   A. Only hiking and photography.

   B. Attending yoga classes.

   C. Exploring different hobbies.

   D. All of the above.

2. What advice does Alex give to beginners who want to try hiking?

   A. Start with short and easy trails.

   B. Wear appropriate footwear and bring water and snacks.

   C. Enjoy the breathtaking views.

   D. All of the above.

3. What does Alex like to capture with his camera?

   A. Animals during hikes.

   B. Beautiful landscapes during hikes.

   C. Delicious meals and recipes.

   D. All of the above.

4. What does Alex like about cooking?

   A. Cooking has become therapeutic.

   B. Alex enjoys experimenting with flavors.

   C. Trying out new recipes brings joy.

   D. All of the above.

2. Listen to the conversation again and decide if the following statements are true or false.

	True	False
1. Alex enjoys exploring different hobbies and activities in their free time.		
2. Sarah has never been interested in hiking.		
3. Sarah is interested in seeing some of Alex's favorite photos.		
4. Sarah wants to try new hobbies, inspired by Alex's enthusiasm.		
5. Alex and Sarah plan to go hiking together sometime in the future.		

FREQUENCY ADVERBS AND EXPRESSIONS OF FREQUENCY

We use frequency adverbs and expressions of frequency with present simple to talk about how often something happens:

Frequency adverbs: Always, usually/normally, often, sometimes, hardly ever, never.

They go before the main verb (but after the verb "to be"):

- *We always go to bed before 11p.m.*
- *She's never late.*
- *I don't often watch TV.*

Expressions of frequency: Once a week, every day, twice a month, three times a year...

They go at the end of the sentence:

- *I have English lessons every day.*

In present simple we can also use other time expressions such as: on Mondays, in the evening, on Tuesday afternoons, in the morning, at weekends... These other time expressions can be placed at the beginning or the end of the sentence:

On Mondays he attends the electricity class. or He attends the electricity class on Mondays.

1.Write sentences about you using frequency adverbs or expressions of frequency:

1.(travel by car). | never travel by car....or.... | travel by car every day...

2.(study at night) .....

3.(play videogames) .....

4.(go to the gym) .....

5.(hang out with friends) .....

6.(study technical English) .....
.....

7.(be late for class) .....

2. Use the adverb and the correct form of the verb in brackets:

1.She ..... her room at the weekend. (often, tidy)

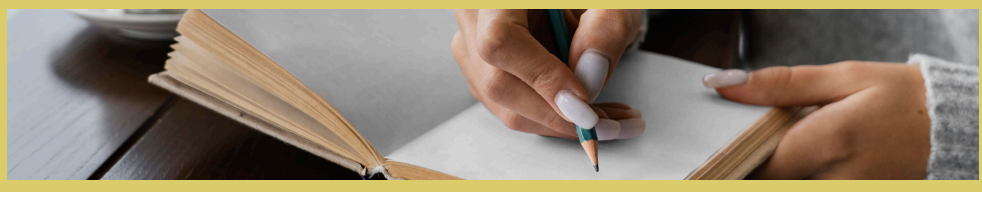
2.Our teacher ..... late for lessons (never, be)

3.The school bus ..... at half past seven. (always, not arrive)

4.I ..... football on TV. (usually, not watch)

5.He ..... very tired after work. (always, be)

1 WRITING



A DAY IN MY LIFE

It's time to share the excitement of your daily routine. Write about a typical day in your life as a mechatronic student. You can include your experiences in class, the challenges you face, and the activities you enjoy outside your studies.

Here are some verbs and phrases you can use:

- get up
- start my classes
- go to the workshop
- finish my classes
- have breakfast
- assemble/ experiment / solve/ test
- have lunch
- go to the gym/watch TV/go out with friends

HOUR	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
08:00 - 09:00					
09:00 - 10:00					
10:00 - 11:00					
11:00 - 12:00					
12:00 - 13:00					
13:00 - 14:00					
15:00 - 16:00					
16:00 - 17:00					

1 SPEAKING & LISTENING

MECHATRONIC YOUTUBERS

In mechatronics, one exciting way to find inspiration and entertainment is by watching people create their own projects. Many of the young mechatronic YouTubers behind these channels have different engineering degrees. Now, let's watch some of their videos. Work in pairs, choose the project you like and explain it to the class: https://youngmechatronic.com/mechatronics-youtubers/

In your explanation of the project, answer the following questions:

1. What do you know about the mechatronic youtuber of your project?
2. What's the purpose of the project?
3. Do you think it is useful?

GO FURTHER...

Do you feel like starting your own project? Here are some ideas. https://youngmechatronic.com/robotics-project-ideas-for-beginners/ Go for it!