ТОВ «ТЕХНІЧНИЙ УНІВЕРСИТЕТ
«МЕТІНВЕСТ ПОЛІТЕХНІКА»

АНГЛІЙСЬКА МОВА ДЛЯ ІНЖЕНЕРІВ ТА ТЕХНОЛОГІВ

**методичні рекомендації
до самостійної роботи
здобувачів освіти першого (бакалаврського) рівня
вищої освіти інженерних спеціальностей
(перший курс)**

Запоріжжя 2025

metinvest polytechnic

УДК 811.111:62 (072)
А64

Рекомендовано Науково-методичною радою
ТОВ «ТЕХНІЧНИЙ УНІВЕРСИТЕТ
«МЕТІНВЕСТ ПОЛІТЕХНІКА»
(протокол №8 від 27.06.2025)

Укладач
Хорошайло О.С., канд. пед. наук, доцент.
Довгаль І. А., старший викладач

А64 Англійська мова для інженерів та технологів : методичні рекомендації до самостійної роботи здобувачів освіти першого (бакалаврського) рівня вищої освіти технічних спеціальностей (перший курс) / уклад.: О. С. Хорошайло, І. А. Довгаль. Запоріжжя : ТОВ «ТЕХНІЧНИЙ УНІВЕРСИТЕТ «МЕТІНВЕСТ ПОЛІТЕХНІКА», 2025. 34 с.

Методичні вказівки розроблено для студентів першого курсу денної форми навчання інженерних спеціальностей з метою організації самостійного опанування матеріалу. Методичні вказівки призначені для розвитку навичок перекладу, відтворення змісту оригінальних текстів, а також для формування навичок усного та писемного мовлення.

У методичних рекомендаціях наведено тексти для самостійного опрацювання, завдання для засвоєння лексичного матеріалу, відповіді для самоконтролю, список літератури

Рекомендовано для студентів інженерних спеціальностей денної форми навчання першого курсу першого (бакалаврського) рівня освіти.

УДК 811.111:62 (072)

ЗМІСТ

ВСТУП

Методичні рекомендації до самостійної роботи здобувачів освіти першого (бакалаврського) рівня вищої освіти технічних спеціальностей розроблено з метою підвищення ефективності навчального процесу та формування у студентів навичок самостійного опрацювання навчального матеріалу.

Самостійна робота є невід'ємною складовою підготовки висококваліфікованих фахівців технічного профілю. Вона сприяє поглибленню знань, розвитку критичного мислення, відповідальності та професійної самостійності.

Метою самостійної роботи студентів з навчальної дисципліни «АНГЛІЙСЬКА МОВА ДЛЯ ІНЖЕНЕРІВ ТА ТЕХНОЛОГІВ» є підготовка до практичних занять з навчальної дисципліни, а також розвинення й вдосконалення навичок самостійної роботи, розроблення власних когнітивних, інформаційних стратегій для самостійного опрацювання навчального матеріалу.

Підібраний текстовий матеріал є органічним компонентом професійної підготовки студентів у сфері інженерії. Фахові тексти та завдання до них допоможуть майбутнім спеціалістам оволодіти відповідною термінологічною лексикою, підготують їх до спілкування англійською мовою у професійному середовищі.

Самостійна робота з англійської мови студентів технічних спеціальностей є особливою формою самоосвіти. Вона має багатофункціональний характер і допомагає оволодіти іноземною мовою як необхідною професійною складовою сучасного спеціаліста, сприяє формуванню навичок автономного отримання знань та розвитку інформаційної культури.

Мета самостійної роботи студентів з дисципліни АНГЛІЙСЬКА МОВА ДЛЯ ІНЖЕНЕРІВ ТА ТЕХНОЛОГІВ полягає у розвитку лінгвістичної, комунікативної соціокультурної компетенції до рівня, який би дозволив користуватися мовою правильно і впевнено у різноманітних ситуаціях особистісного, професійного та освітнього характеру.

Завдання самостійної роботи з дисципліни АНГЛІЙСЬКА МОВА У СФЕРІ БЕЗПЕКИ ПРАЦІ полягає у вдосконаленні професійно-орієнтованих вмінь володіння мовою.

Зміст самостійної роботи студентів з дисципліни АНГЛІЙСЬКА МОВА ДЛЯ ІНЖЕНЕРІВ ТА ТЕХНОЛОГІВ складається з таких видів роботи:

– переклад текстів за професійним спрямуванням;
– пошук додаткової інформації щодо окремих питань;
– дати відповіді на питання до тексту;
– виконання лексичних вправ;

– підготовка до усіх видів контролю, в тому числі до контрольних модульних робіт.

Самостійна робота з дисципліни Іноземна мова (за професійним спрямуванням) передбачає поглиблене вивчення студентом окремих питань, систематизацію знань, що сприяє розширенню світогляду студента, розвиток навичок самостійної роботи з матеріалами, електронними та INTERNET-ресурсами, формує культуру майбутнього фахівця у сфері інженерії.

Theme 1. Tools and technologies

TASK 1. Read the text

Engineering is a field that has been transforming the world for centuries. It combines scientific principles with creativity to solve problems and improve our daily lives. From building bridges to creating tiny electronic gadgets, engineers use various tools and technologies every day to get their work done efficiently.

One of the most common tools in engineering is computer software. Engineers use tools like computer-aided design (CAD) software to create detailed models and designs. This software allows them to see how their projects will look and function before any physical work begins. It helps in making changes easily and ensures that everything is planned precisely. Simulations, another valuable tool, are used to test how designs will perform under different conditions. This means engineers can predict and solve problems before they occur in real life.

In the modern era, technologies like 3D printing are revolutionising engineering. With a 3D printer, engineers can create prototypes rapidly. This is not only faster but also cost-effective. 3D printing allows for complex designs that would be difficult to produce using traditional methods. It is particularly useful in industries like aerospace and healthcare, where precision and customisation are crucial.

Robotics is another exciting technology in engineering. Robots can perform tasks that are dangerous or difficult for humans. In manufacturing, for example, robots assemble products with speed and accuracy. They can work in extreme conditions, handling hot metals or toxic materials safely. Robotics is also making significant strides in fields like medicine, where robotic arms assist surgeons in performing delicate operations.

Apart from these, engineers rely heavily on communication technologies. Tools like video conferencing and project management software facilitate teamwork, especially when teams are spread across different locations. This ensures that everyone stays on the same page and projects progress smoothly.

The advent of smart technologies, such as the Internet of Things (IoT), is further enhancing engineering. IoT devices collect data from various sources and provide insights that can improve system efficiency. In civil engineering, for instance, smart sensors monitor the structural health of bridges and buildings to ensure safety and maintenance needs.

In conclusion, tools and technologies play a crucial role in engineering. They not only make processes more efficient but also open up possibilities for innovation. As technology evolves, so too will the ways in which engineers solve problems and change the world.

Task 2.Pick the Right Answer

1. What is the primary role of computer-aided design (CAD) software in engineering?
A. To manufacture physical products
B. To create detailed models and designs before physical work
C. To replace human engineers completely
D. To sell engineering projects to clients

2. How do engineers use robotics in different industries?
A. Only for entertainment purposes
B. To perform dangerous or complex tasks that are difficult for humans
C. To replace all human workers
D. To design new buildings

3. What makes 3D printing particularly useful in engineering?
A. It is slow and expensive
B. It can only create simple designs
C. It allows for rapid and cost-effective prototype creation
D. It is only used in small workshops

4. What is the main purpose of IoT devices in engineering?
A. To create entertainment systems
B. To collect data and provide insights for improving system efficiency
C. To replace human communication
D. To design new computer software

5. How do communication technologies benefit engineering teams?
A. They have no significant impact
B. They make teamwork more difficult
C. They facilitate collaboration across different locations
D. They are only used for personal communication

6. What is a key advantage of using simulations in engineering?
A. They are expensive and time-consuming
B. They can predict and solve potential problems before real-life implementation
C. They are only useful in small projects
D. They replace physical testing completely

7. According to the text, how do smart technologies contribute to civil engineering?
A. By creating more complex buildings
B. By monitoring structural health of infrastructure

C. By replacing all human engineers
D. By designing new cities

Task 3. Let's match these halves!

1. Simulations, another valuable tool, are used to test	a. dangerous or difficult for humans.
2. 3D printing allows for complex designs	b. how designs will perform under different conditions.
3. This software allows them to see how their projects will look and function	c. that would be difficult to produce using traditional methods.
4. Robots can perform tasks that are	d. before any physical work begins.

Task 4. Can You Fill in the Blanks

safety, enhancing, technologies, civil, facilitate, spread, page, data

Apart from these, engineers rely heavily on communication _____(1). Tools like video conferencing and project management software _____(2) teamwork, especially when teams are _____(3) across different locations. This ensures that everyone stays on the same _____(4) and projects progress smoothly.

The advent of smart technologies, such as the Internet of Things (IoT), is further _____(5) engineering. IoT devices collect _____(6) from various sources and provide insights that can improve system efficiency. In _____(7) engineering, for instance, smart sensors monitor the structural health of bridges and buildings to ensure _____(8) and maintenance needs.

Task 5. Can You Match These Words to Their Definitions

1. spread	a. the condition of being protected from harm or danger.
2. data	b. to improve the quality, value, or extent of something.
3. software	c. to make a process easier or help it happen more smoothly.
4. enhance	d. facts or information collected for analysis or reference.
5. safety	e. to extend over a larger area or to distribute something widely.
6. technologies	f. methods and tools that are developed to solve problems or improve tasks.
7. facilitate	g. programmes and applications that run on computers or devices to perform specific tasks.

Theme 2. Engineering Materials.

TASK 1. Read the text

Engineering materials are the building blocks of all the wonderful things around us. From your mobile phone to the towering skyscrapers, everything relies on materials that engineers have carefully chosen and shaped to suit their purpose.

The world of engineering materials is quite diverse. One of the most common materials you might hear about is metals. Metals like steel and aluminium are favoured in engineering because they are strong and durable. Steel, for example, is used in the construction of buildings and bridges. Aluminium, on the other hand, is much lighter than steel, making it perfect for use in aeroplanes and some car parts.

Plastics are another type of material commonly used by engineers. They are incredibly versatile, which means they can be used for a wide range of applications. Plastics are lightweight, resistant to damage by water, and can be moulded into almost any shape. You'll find them in everyday items like bottles, containers, and even in the dashboard of your car.

Ceramics are also important. These are non-metallic and non-organic materials. They are very hard and can withstand high temperatures, which makes them perfect for use in things like ovens or the tiles that cover the space shuttles. Because they don’t conduct electricity, ceramics are also useful in electronic devices.

Composites are materials made by combining two or more different materials. This gives them unique strengths. For example, fibreglass is a composite made from glass fibres and plastic. It is used in sports equipment such as tennis rackets and fishing rods because it is both lightweight and strong.

One of the exciting areas in engineering materials is the development of smart materials. These are special because they can change in response to their environment. For example, some materials change colour when they are heated or stretched, while others can return to their original shape after being bent. Engineers hope these smart materials will be useful for things like medical devices or clothing that can adapt to the weather.

Each material has its unique properties, making it more or less suitable for a particular job. Engineers must understand these properties to choose the right material for each project. This involves considering factors such as strength, weight, and how the material reacts to heat or chemicals.

Understanding engineering materials helps us improve our world and make products that are stronger, lighter, and more efficient. It’s a field with much innovation, and as technology advances, so will our ability to create new and better materials for the future.

Task 2.Pick the Right Answer

1. What is the main purpose of engineering materials?
A. To create decorative objects
B. To build technological and structural components
C. To replace traditional manufacturing methods
D. To develop new construction techniques

2. According to the text, why are metals like steel and aluminium important in engineering?
A. They are expensive
B. They are lightweight and decorative
C. They are strong, durable, and have different properties
D. They are easily found in nature

3. What makes composites unique in engineering materials?
A. They are always metallic
B. They combine different materials to create unique strengths
C. They are only used in sports equipment
D. They cannot be modified

4. What distinguishes smart materials from other engineering materials?
A. They are always made of metal
B. They cannot change shape
C. They can respond and adapt to environmental changes
D. They are only used in medical devices

5. How do engineers choose the right material for a project?
A. By randomly selecting materials
B. By considering factors like strength, weight, and chemical reactions
C. By using the most expensive option
D. By ignoring material properties

6. What characteristic makes ceramics useful in electronic devices?
A. They are very heavy
B. They conduct electricity well
C. They do not conduct electricity
D. They are always colourful

7. What is the main benefit of understanding engineering materials?
A. To create more expensive products
B. To develop stronger, lighter, and more efficient products
C. To limit technological innovation
D. To reduce manufacturing complexity

Task 3. Answer the Questions

Questions:
1. What are some examples of common engineering materials?
2. What are the key properties of metals that make them useful in engineering?
3. How are plastics used in engineering, and what are their advantages?
4. What are the unique properties of ceramics that make them valuable in engineering applications?
5. How do composite materials combine different materials to create unique strengths?
6. What are "smart materials," and how might they be used in the future?
7. What factors do engineers consider when choosing the right material for a project?

Task 4. Can You Fill in the Blanks

resistant, moulded, cover, dashboard, versatile, devices, withstand

Plastics are another type of material commonly used by engineers. They are incredibly _____(1), which means they can be used for a wide range of applications. Plastics are lightweight, _____(2) to damage by water, and can be _____(3) into almost any shape. You'll find them in everyday items like bottles, containers, and even in the _____(4) of your car.
Ceramics are also important. These are non-metallic and non-organic materials. They are very hard and can _____(5) high temperatures, which makes them perfect for use in things like ovens or the tiles that _____(6) the space shuttles. Because they don't conduct electricity, ceramics are also useful in electronic _____(7).

Task 5. Match the halves of the sentences

1. Plastics are another type of material	a. because they are strong and durable.
2. The world of engineering materials is	b. commonly used by engineers.
3. Aluminium, on the other hand, is much lighter	c. a wide range of applications.
4. Plastics are lightweight, resistant to damage by water, and can be moulded	d. than steel, making it perfect for use in aeroplanes and some car parts.

5. Metals like steel and aluminium are favoured in engineering	e. quite diverse.
6. They are incredibly versatile, which means they can be used for	f. into almost any shape.

Theme 3. Meetings and presentations

TASK 1. Read the text

In the world of engineering, meetings and presentations are an essential part of the job. Engineers often need to discuss their projects, share their ideas, and answer questions from colleagues or clients. Understanding how these activities work can help you become a successful engineer.

Firstly, let's talk about meetings. In engineering, meetings happen often. They can be with your team, other departments, or even clients. The purpose of these meetings is to ensure everyone is on the same page. At the start of a meeting, someone usually outlines the agenda. This is a list of topics that will be discussed. It's important to prepare for meetings by reviewing any notes or documents you might need. During the meeting, you should listen carefully and take notes. There might be a moment when you need to give an update on your part of the project. It's important to speak clearly and stay on topic. After the meeting, there might be tasks or actions you need to follow up on, so make sure you know what those are.

Presentations are another common activity in engineering. When you need to present your work, it usually means providing detailed information about a project or an idea. Preparing for a presentation can take time. You need to create slides or materials that will help others understand your topic. A good presentation has a clear introduction, a detailed middle, and a strong conclusion. Practising your presentation is key. You should know the order of your slides and be ready to answer questions from the audience. During the presentation, it's important to speak slowly and make eye contact. This helps people stay interested and understand your message.

In engineering, both meetings and presentations often include technical language. It's crucial to explain complex terms in a simple way so that everyone can understand, even if they are not experts in the subject.

Overall, meetings and presentations are essential in engineering because they allow people to share information and ideas. By preparing well and practising your communication skills, you can ensure your ideas are understood and valued by others. Being effective in these areas can help you advance in your engineering career.

Task 2. Answer the Questions

Questions:

1. What is the purpose of meetings in engineering?
2. What is typically included in the agenda of an engineering meeting?
3. What should you do during an engineering meeting to ensure you are prepared and engaged?
4. What are the key elements of a good engineering presentation?

5. Why is it important to use simple language when presenting technical information in engineering?
6. How can effective communication in meetings and presentations help you advance in your engineering career?
7. What are some of the common activities that take place during engineering meetings and presentations?

Task 3. Can You Tell which Sentences are True and which are False?

1. Engineers rarely participate in meetings because they prefer to work alone.
2. It's not necessary to know the agenda at a meeting.
3. It's important to take notes during meetings.
4. Preparing for a presentation doesn't take much time.
5. A good presentation should have a clear introduction, a detailed middle, and a strong conclusion.
6. Practice before a presentation is not important if you know the topic well.
7. During a presentation, you don't need to maintain eye contact with the audience.
8. Engineers don't need to simplify complex technical information.
9. Meetings and presentations do not play an important role in sharing information and ideas in engineering.
10. Being effective in meetings and presentations can help advance an engineer's career.

Task 4. Can You Fill in the Blanks

eye, stay, topic, conclusion, key, take, audience, introduction, providing

Presentations are another common activity in engineering. When you need to present your work, it usually means _____(1) detailed information about a project or an idea. Preparing for a presentation can _____(2) time. You need to create slides or materials that will help others understand your _____(3). A good presentation has a clear _____(4), a detailed middle, and a strong _____(5). Practising your presentation is _____(6). You should know the order of your slides and be ready to answer questions from the _____(7). During the presentation, it’s important to speak slowly and make _____(8) contact. This helps people _____(9) interested and understand your message.

Task 5. Let's Dive into a Dialogue!

Oliver: So, are you ready for the meeting later?

Claire: Oh, definitely! I've gone through all my notes and updated the slides. It should be straightforward.

Oliver: That's good to hear. Remember to stay focused when presenting. It's easy to get sidetracked if someone asks a tricky question.

Claire: Yeah, I know. I'll stick to the main points and try not to overcomplicate things.

Oliver: Exactly! And don't forget to make eye contact with everyone. It helps keep them engaged.

Claire: Right! I'll practise a couple of times before we start, just to calm my nerves.

Oliver: Great idea. I usually run through my presentation with someone first; it really helps.

Claire: Maybe I could present in front of you next time before our big meetings?

Oliver: Sounds like a plan! Just remember, it's alright if everything doesn't go perfectly. We're all learning together.

Claire: True, but I still want to impress the team. Their feedback means a lot to me.

Oliver: Of course! But they'll appreciate your effort. After all, clear communication is key in engineering.

Claire: You're right! Let's make sure we both follow up on any tasks afterwards as well.

Oliver: Absolutely. That'll ensure we're all aligned going forward.

Theme 4. Technical reports and diagrams

1. What is a Technical Report?

A technical report is a type of document that describes the process, progress, or results of technical or scientific research. It is written to explain how a project was done, what was discovered, and what conclusions were made. Technical reports are common in engineering, IT, science, and industry.

These reports are usually written for engineers, managers, scientists, or other professionals. They must be clear, logical, and easy to follow. A good technical report helps others understand complex information without confusion.

2. Structure of a Technical Report

Most technical reports have a similar structure. Here are the main parts:

a) Title Page

This includes the title of the report, your name, the date, and the name of the organization or university.

b) Abstract

The abstract is a short summary (usually 100–200 words) of the whole report. It tells the reader what the report is about, what you did, and what you found.

c) Table of Contents

This part lists the sections and page numbers of the report so readers can find information quickly.

d) Introduction

The introduction explains the purpose of the report, the background of the topic, and the main objectives.

e) Methodology

Here, you describe how the work or research was done. You write about the materials, tools, or methods used.

f) Results

In this section, you present your findings. You can use tables, charts, or diagrams to show the results clearly.

g) Discussion

You explain what the results mean, why they are important, and how they relate to the original question.

h) Conclusion

A short section that summarizes the main points and may include suggestions for future work.

i) References

A list of all the sources (books, websites, articles) used in your report.

3. Language Tips for Writing Reports

Use formal language (avoid slang or personal language).

Use the passive voice when needed (e.g., "The test was conducted using...").

Use clear and simple grammar.

Write in the past tense when talking about what was done.
Use bullet points or numbering for lists.

4. Diagrams in Technical Reports

A diagram is a visual way to explain or show information. Diagrams are very helpful in technical reports because they make it easier to understand processes, systems, and data.

Here are the common types of diagrams:

a) Flowcharts

Flowcharts show steps in a process. They are good for describing procedures, systems, or algorithms.

b) Schematics

Schematics are used in electronics or engineering to show the design of circuits or machines.

c) Graphs and Charts

Graphs (line graphs, bar charts, pie charts) help to show data visually. They are useful in the results section.

d) Technical Drawings

These are detailed drawings of machines, buildings, or devices, often made using CAD (computer-aided design) software.

5. How to Describe Diagrams in English

When writing about diagrams, use these helpful phrases:

“The diagram shows…”
“According to the diagram…”
“As we can see from the chart…”
“The flowchart illustrates the process of…”
“In the graph, we can see that…”

Use prepositions like:

at – “The line stops at 20°C.”
in – “There is a drop in temperature.”
from… to… – “The value increased from 30 to 50 units.”
by – “Sales increased by 20%.”

6. Example (Mini Report)

Title: Analysis of Energy Use in the Engineering Building

Abstract:

This report analyzes the energy consumption of the Engineering Building at our university. Data was collected over one month. The results show that the highest energy use was in the computer lab and the lowest in the meeting rooms. Recommendations are made to reduce energy costs.

Introduction:

Energy efficiency is important for reducing costs and protecting the environment. This report looks at how much energy is used in different parts of the Engineering Building.

Methodology:

We used smart meters to measure electricity use in five areas: classrooms, labs, offices, hallways, and meeting rooms. Data was recorded daily from 1–31 March.
Results:
The graph below shows average daily energy use.
Labs: 40 kWh
Classrooms: 30 kWh
Offices: 25 kWh
Hallways: 15 kWh
Meeting rooms: 10 kWh
Discussion:
The computer labs used the most energy, likely due to machines running all day. Offices and classrooms also had high usage. Hallways and meeting rooms used much less energy.
Conclusion:
To reduce energy use, we recommend turning off devices after work hours and installing motion sensors in the hallways.
7. Why Technical Reports and Diagrams Matter
In your future job, you will often write or read technical reports. You may also create diagrams or understand them. Being able to do this clearly and correctly is important for success in engineering, IT, and many other technical fields.
Technical reports help people make decisions, build things, and solve problems. Diagrams help people understand systems and data quickly. Together, they are powerful tools for communication in the technical world.
8. Final Tips
Practice writing reports with simple topics first.
Look at real-life examples from your field.
Always edit and check your grammar, spelling, and structure.
Use diagrams where possible – one picture can explain a lot!

Task 1. Choose the correct answer.

1. What is the main purpose of a technical report?
A. To entertain readers
B. To explain technical work and results
C. To advertise a product

2. Where is the best place to include diagrams in a report?
A. In the references
B. In the abstract
C. In the results or discussion

3. What type of diagram shows steps in a process?

A. Flowchart
B. Pie chart
C. Technical drawing

4. What tense is usually used in technical reports?
A. Future
B. Past
C. Present Continuous

5. What is usually written in the “Methodology” section?
A. A list of sources
B. The tools and methods used
C. A conclusion about the topic

Task 2: Match the Parts of the Report

Match the report section (1–6) with the correct description (A–F).

1. Abstract	A. Shows the final ideas and suggestions
2. Introduction	B. Explains the purpose and background
3. Results	C. A short summary of the whole report
4. Methodology	D. Lists the books or websites used
5. Conclusion	E. Describes what was found
6. References	F. Describes how the work was done

Task 3. Fill in the Gaps (Vocabulary)

Complete the sentences with these words: *diagram – report – flowchart – results – data – technical*

A _____ report must be clear and easy to follow.

The engineer made a _____ to explain the machine's process.

All the _____ were collected over one month.

The _____ section shows the numbers and facts.

This _____ shows how the software system works.

I wrote a short _____ about our group project.

Task 4. Rewrite the sentences in the passive voice.

We measured the energy use in five rooms.
→ _____

The team collected the data every day.
→ _____

They used smart meters for the experiment.
→ _____

We made several diagrams for the report.
→ _____

Task 5. Speaking – Talk About a Project

Use these questions to prepare a short talk (1–2 minutes) about a technical project you have done or would like to do. Use technical report structure:
What is the title of your project?
What was the purpose of the project?
How did you do it? (methods, tools)
What were the results?
What did you learn or conclude?
(You may use phrases like: The purpose of this project was…, We used…, The results showed that…, In conclusion…)

Task 6. Writing – Describe a Diagram

Look at a sample diagram (your teacher will give one, or imagine a simple flowchart of a process like “How to submit a university assignment”). Then write a short paragraph (5–6 sentences) to describe the diagram.
Use these phrases:
The diagram shows…
First… Then… After that… Finally…
According to the diagram…
This process includes…

Theme 5. Reading and understanding technical texts

Reading technical texts is an important skill for all students in technical universities. Whether you study engineering, computer science, architecture, or any other technical field, you will often need to read articles, manuals, reports, and academic papers in English. These texts contain important information about technology, systems, methods, and new research. But they can also be difficult to understand.

In this article, we will look at different types of technical texts, common features of these texts, and useful strategies to help you read and understand them better.

📚 1. What Are Technical Texts?

Technical texts are texts that give information about science, technology, or specific subjects. They are usually written by experts for students, professionals, or other experts. These texts may include:

Textbooks and academic articles
User manuals and instruction guides
Technical reports
Research papers
Product specifications
Software documentation

These texts are usually formal, objective, and informative. They focus on facts, not opinions.

🔍 2. Characteristics of Technical Texts

Understanding technical texts is not the same as reading a story or a news article. Here are some typical features:

1. Technical vocabulary

Technical texts often use special words and phrases related to a specific subject. For example, in electronics, you might see words like “resistor,” “voltage,” or “circuit.”

☞ Tip: Create a personal glossary. Write new words with their meanings and examples.

2. Passive voice

Technical texts often use the passive voice. For example:

“The system was tested by the engineers.”

This makes the writing more formal and focuses on the process, not the person.

3. Diagrams and figures

Technical texts often include visual elements like diagrams, charts, graphs, and tables. These help explain complex information more clearly.

☞ Tip: Always look at the title and labels of a diagram. They help you understand the main idea.

4. Complex sentence structure

Sentences in technical texts may be long and have many clauses. This can make them difficult to understand.

☞ Tip: Break long sentences into smaller parts. Look for the subject, verb, and object to find the main idea.

🕮 3. How to Read Technical Texts Effectively

Many students try to read technical texts word by word. But this is not the best method. Use the following strategies to improve your reading:

1. Preview the text

Before reading the full text, look at:

The title

Headings and subheadings

Pictures and diagrams

Bold or italic words

Summary or conclusion

This gives you a general idea of the topic.

2. Skim for the main idea

Read the first sentence of each paragraph. Try to understand the topic and purpose of each part. Don't stop for every unknown word.

3. Scan for specific information

If you are looking for numbers, names, or specific facts, move your eyes quickly over the text to find them. This is useful for reading tables or technical data.

4. Guess the meaning from context

When you don't know a word, look at the sentence and surrounding words. Try to understand the meaning without a dictionary. For example:

"The turbine rotates at a high speed to produce energy."

You can guess that "turbine" is a machine that moves and helps make energy.

5. Take notes and highlight

Write short notes in your notebook or underline important ideas in the text. This helps you remember what you read.

🛠 4. Common Problems and How to Solve Them

❌ Problem: Too many difficult words

✅ Solution: Don't stop for every word. Focus on the words that are key to understanding the main idea. Use a technical dictionary if needed.

❌ Problem: Long and confusing sentences

✅ Solution: Divide the sentence into parts. Find the subject and verb first.

❌ Problem: Text is boring or too complex

✅ Solution: Set a small goal. Read one paragraph or section at a time. Try to explain it in your own words.

➡ 5. Practice Makes Perfect

Like any other skill, reading technical texts takes practice. Start with easier materials, like simple reports or manuals. Then move on to more difficult texts, such as research papers.
Here are some good sources for practice:
Simple Wikipedia (https://simple.wikipedia.org)
HowStuffWorks (https://www.howstuffworks.com)
Engineering blogs or product manuals
Technical websites like IEEE, NASA, or MIT OpenCourseWare
You can also read your own university textbooks in English. Try to compare the English version with your native language version.

📌 6. Useful Vocabulary for Technical Reading

English Term	Meaning (in simple words)
device	a machine or tool
system	a group of parts working together
process	a series of steps to do something
function	the purpose of something
to generate	to produce or make something
to measure	to find the size or amount
data	information, usually in numbers
efficiency	how well something works
method	a way of doing something
component	a part of a larger system or machine

✅ Conclusion

Reading technical texts is a valuable skill for every technical student. At first, it may feel difficult or boring. But with practice, the right strategies, and some patience, you can improve your reading and understanding. Use visuals, focus on main ideas, and grow your technical vocabulary step by step.
The more you read, the easier it becomes!

Task 1. Read the statements and write T (True) or F (False):

1. Technical texts are usually written for entertainment.
2. Diagrams and tables help explain difficult information.
3. You should read every word in a technical text.
4. Passive voice is common in technical writing.
5. A glossary is a list of grammar rules.

Task 2. Match the Word with Its Meaning

Match the words from the text with their definitions.

Word	**Meaning**
1. process	A. a part of a machine or system
2. generate	B. information in numbers
3. component	C. steps to complete a task
4. data	D. to make or produce something
5. efficiency	E. how well something works

Task 3. Fill in the Gaps.

Use these words to complete the sentences: *data, function, device, method, system*

We used a new _____ to test the motor.
The main _____ of the software is to control the machine.
This _____ collects energy from the sun.
Our team developed a new _____ to improve accuracy.
The _____ was tested in different environments.

Task 4. Short Answer (Understanding Strategies)

Answer the questions in 1–2 sentences based on the text:
What is the difference between skimming and scanning?
Why should you not stop for every unknown word?
What is a good way to prepare before reading a technical text?
How can diagrams help you understand a text better?

Theme 6. Technical projects and engineering drawings

Technical projects are an essential part of engineering. Whether students are studying mechanical, civil, electrical, or computer engineering, they will often work on projects that require planning, teamwork, technical knowledge, and good communication. A key element of these projects is the use of engineering drawings, which help communicate ideas and designs clearly and precisely.

What Are Technical Projects?

A technical project is a structured task with a clear objective, often involving designing, building, testing, or improving a product, system, or process. For example, a mechanical engineering student might build a robotic arm, while a civil engineering student might design a small bridge model.

Technical projects often follow specific steps:

Planning – Defining goals, tasks, materials, and deadlines.

Research – Understanding existing technologies and solutions.

Design – Creating a plan or model using engineering drawings.

Construction or Implementation – Building or creating the design.

Testing and Evaluation – Making sure the final product works correctly and safely.

Presentation or Report – Explaining the project in written or oral form.

These steps help students develop problem-solving skills, teamwork, and technical understanding.

The Role of Engineering Drawings

Engineering drawings are a visual language used by engineers and designers to explain how something is built or assembled. These drawings contain precise measurements, materials, and instructions. They are usually created using CAD software (Computer-Aided Design), which allows for accurate and detailed plans.

There are several types of engineering drawings, including:

Orthographic projection – A method of representing a 3D object in two dimensions, usually showing front, top, and side views.

Isometric drawing – A type of 3D drawing where the object is shown at an angle to help visualize its shape.

Assembly drawings – Show how different parts fit together.

Detail drawings – Focus on a single part with exact dimensions and materials.

Engineers must be able to read and understand these drawings. They must also follow standard conventions, such as line types, symbols, and scales, to ensure accuracy and consistency.

Why Engineering Drawings Are Important

Engineering drawings serve many purposes:

Communication: Drawings help team members, clients, and manufacturers understand the design.

Precision: Drawings show exact sizes, shapes, and positions of parts.
Documentation: They provide a record of the design for future reference.
Problem solving: Engineers can use drawings to test ideas and identify errors before building.
Even a small mistake in a drawing can lead to problems during construction, so attention to detail is critical.
Working in Teams on Projects
Most technical projects are done in teams. This means that students must learn to collaborate, share tasks, and communicate effectively. In a team project, each member may have a specific role, such as:
Team leader – Organizes meetings and monitors progress.
Design engineer – Creates sketches and CAD drawings.
Researcher – Looks for information on materials or similar projects.
Builder – Works on creating the physical model or system.
Presenter – Prepares the final presentation or report.
Working in a team helps students learn important skills they will need in the workplace, such as responsibility, time management, and leadership.
Using Technology in Projects
Modern engineering projects use technology at every stage. For example:
CAD software helps create accurate and professional engineering drawings.
3D printing allows teams to create models or prototypes quickly.
Simulation programs can test designs virtually before building.
Project management tools (like Trello or Microsoft Project) help teams organize their tasks and deadlines.
Understanding and using these tools gives students a big advantage in their future careers.
Writing Project Reports
At the end of a technical project, students often write a report or give a presentation. A good project report should include:
Introduction – What was the goal of the project?
Methods – How did the team complete the project?
Results – What was built or tested? What data was collected?
Analysis – What went well? What could be improved?
Conclusion – What was learned? What are the next steps?
Clear writing, good grammar, and proper technical vocabulary are important. Diagrams, photos, and graphs can also make the report more professional and easier to understand.
Conclusion
Technical projects and engineering drawings are essential parts of an engineer’s education. Through these activities, students learn how to apply theory in practice, work in teams, use technical tools, and communicate their ideas clearly. By understanding the importance of accurate engineering drawings and effective teamwork, students prepare themselves for real-world engineering challenges.

Task 1. True or False

1. A technical project always ends with a test or evaluation.
2. Engineering drawings are usually hand-drawn.
3. An isometric drawing shows a 3D object from different angles.
4. A detail drawing usually shows many parts together.
5. CAD software is often used to create accurate drawings.

Task 2. Match the technical terms with their correct definitions:

Term	Definition
1. CAD	A. Visual plan showing front, top, and side views
2. Orthographic view	B. A computer program used for drawing designs
3. Prototype	C. A working model used for testing ideas
4. Simulation	D. A virtual test of how a system or design behaves
5. Assembly drawing	E. A diagram that shows how all parts fit together

Task 3. Choose the correct word from the list to complete each sentence:

components, project, dimensions, teamwork, software

Every engineering _____ has specific goals and deadlines.
You need accurate _____ when creating technical drawings.
CAD _____ helps engineers create precise and clean diagrams.
Good _____ is important when students work in groups.
An assembly drawing shows how all the _____ fit together.

Task 4. Answer these questions in 1–2 sentences based on the text:

What are the main steps in a technical project?
Why is attention to detail important in engineering drawings?
What are some common roles in a student project team?
What should be included in a final project report?

Task 5. Identify the Type of Drawing. Look at the description and write the name of the correct type of engineering drawing: (Orthographic, Isometric, Assembly, Detail)

1. This drawing shows the object from the front, side, and top. → _____
2. This type of drawing focuses on one small part with exact measurements. → _____

3. This shows the object in 3D, usually at an angle. → _____
4. This drawing shows how all the parts fit and work together. → _____

KEYS

Theme 1. Tools and technologies

Task 2.
1. B 2. B 3. C 4. B 5. C 6. B 7. B
Task 3.
1. B 2. C 3. D 4. A
Task 4. 1 technologies 2 facilitate 3 spread 4 page 5 enhancing 6 data 7 civil 8 safety
Task 5. 1. E 2. D 3. G 4. B 5. A 6. F 7. C

Theme 2. Engineering Materials.

Task 2. 1. B 2. C 3. B 4. C 5. B 6. C 7. B
Task 3. Correct answers:
1. Common engineering materials include metals, plastics, ceramics, and composites.
2. Metals like steel and aluminium are favoured in engineering because they are strong and durable. Steel is used in construction, while aluminium is lightweight and suitable for use in aeroplanes and cars.
3. Plastics are incredibly versatile, lightweight, resistant to water damage, and can be moulded into almost any shape. They are used in everyday items like bottles, containers, and car dashboards.
4. Ceramics are non-metallic and non-organic materials that are very hard and can withstand high temperatures, making them perfect for use in ovens and on space shuttles. They also do not conduct electricity, making them useful in electronic devices.
5. Composite materials are made by combining two or more different materials, giving them unique strengths. For example, fibreglass is a composite made from glass fibres and plastic, which is both lightweight and strong, making it suitable for sports equipment.
6. "Smart materials" are special materials that can change in response to their environment, such as changing colour when heated or stretched, or returning to their original shape after being bent. Engineers hope to use these materials in medical devices or adaptive clothing.
7. Engineers consider factors such as strength, weight, and how the material reacts to heat or chemicals when choosing the right material for a project.
Task 5. 1. B 2. E 3. D 4. F 5. A 6. C

Theme 2. Meetings and presentations

Task 2.

1. The purpose of meetings in engineering is to ensure everyone is on the same page and to discuss projects, share ideas, and answer questions from colleagues or clients.
2. The agenda of an engineering meeting typically includes a list of topics that will be discussed.
3. During an engineering meeting, you should prepare by reviewing any notes or documents you might need, listen carefully, take notes, and be ready to provide updates on your part of the project.
4. The key elements of a good engineering presentation include a clear introduction, a detailed middle, and a strong conclusion, as well as well-prepared slides or materials and a practised delivery.
5. It is important to use simple language when presenting technical information in engineering to ensure that everyone, even those who are not experts in the subject, can understand the content.
6. Effective communication in meetings and presentations can help you advance in your engineering career by ensuring your ideas are understood and valued by others.
7. Common activities that take place during engineering meetings and presentations include discussing projects, sharing ideas, answering questions, and providing updates on the progress of a project.

Task 3.

1. False – Engineers often participate in meetings to collaborate, discuss projects, and share updates. Working alone is not the norm in most engineering environments.
2. False – Knowing the agenda is important to stay prepared and contribute effectively during a meeting.
3. True – Taking notes helps remember key points and follow up on action items.
4. False – Preparing a good presentation usually takes time to structure content, design visuals, and practice delivery.
5. True – A good presentation typically includes a clear introduction, detailed main content, and a strong conclusion to engage and inform the audience.
6. False – Even if you know the topic, practicing helps improve clarity, timing, and confidence.
7. False – Maintaining eye contact is essential for engaging the audience and establishing a connection.
8. False – Engineers often need to simplify technical information for non-technical stakeholders or team members.

9. False – Meetings and presentations are key for communication, collaboration, and decision-making in engineering.

10. True – Strong communication skills, including effective participation in meetings and presentations, are valuable for career growth in engineering.

Task 4.

1. providing
2. take
3. topic
4. introduction
5. conclusion
6. key
7. audience
8. eye
9. stay

Theme 4. Technical reports and diagrams

Task 1. 1 B 2 C 3 A 4 B 5 B
Task 2:
Abstract → C. A short summary of the whole report
Introduction → B. Explains the purpose and background
Results → E. Describes what was found
Methodology → F. Describes how the work was done
Conclusion → A. Shows the final ideas and suggestions
References → D. Lists the books or websites used
Task 3: A technical report must be clear and easy to follow. The engineer made a diagram to explain the machine's process. All the data were collected over one month. The results section shows the numbers and facts. This flowchart shows how the software system works. I wrote a short report about our group project.
Task 4.
The energy use was measured in five rooms.
The data was collected every day.
Smart meters were used for the experiment.
Several diagrams were made for the report.
Task 6. Writing – (Sample Answer)
The diagram shows the process of submitting an assignment at the university.
First, the student prepares the work. Then, the file is uploaded to the online system.

After that, the system checks for plagiarism. Finally, the assignment is sent to the professor.
According to the diagram, all steps must be finished before the deadline.
This process includes digital tools and automatic checking.

Theme 5. Reading and understanding technical texts

Task 1.

1. F – Technical texts are informative, not for entertainment.
2. T – Diagrams and tables help explain complex information.
3. F – You shouldn’t read every word; use skimming/scanning strategies.
4. T – Passive voice is often used in technical texts.
5. F – A glossary is a list of technical words with meanings, not grammar rules.

Task 2.

process → C
generate → D
component → A
data → B
efficiency → E

Task 3.

We used a new method to test the motor.
The main function of the software is to control the machine.
This device collects energy from the sun.
Our team developed a new method to improve accuracy.
The system was tested in different environments.

Task 4.

Skimming is reading quickly to find the main idea; scanning is looking for specific information like numbers or names.
Because it can slow you down. It's better to focus on key words and guess the meaning from context.
Look at the title, headings, images, and key words to understand the general idea.
Diagrams give a visual explanation of information and can make it easier to understand complex ideas.

Theme 6. Technical projects and engineering drawings

Task 1.

1. T – A technical project usually includes testing and evaluation.
2. F – Engineering drawings are usually created using CAD software, not by hand.
3. T – Isometric drawings show 3D objects from an angle.
4. F – A detail drawing shows one part, not many.

5. T – CAD software is used for accurate technical drawings.

Task 2.

1. CAD B
2. Orthographic view A
3. Prototype C
4. Simulation D
5. Assembly drawing E

Task 3.

Every engineering project has specific goals and deadlines.
You need accurate dimensions when creating technical drawings.
CAD software helps engineers create precise and clean diagrams.
Good teamwork is important when students work in groups.
An assembly drawing shows how all the components fit together.

Task 4.

Planning, research, design, implementation, testing, and presentation.
Because even a small mistake in a drawing can cause problems during building.
Team leader, design engineer, researcher, builder, presenter.
Introduction, methods, results, analysis, conclusion.

Task 5.

1. Orthographic
2. Detail
3. Isometric
4. Assembly

ЛІТЕРАТУРА

1. Glendinning E. H., McEvan J. Basic English for science and technology. Oxford University press, 2003.
2. Raghavan V. Physical Metallurgy: Principles and Practice. 3rd ed. PHI Learning, 2015. 260 p.
3. Верба Г. В. Довідник з граматики англійської мови. Київ : Освіта, 2010.
4. English for metal forming engineering and research in metallurgy and material science : a tutorial / I. Nikitina et al. ; edited by prof. V. Kukhar. 2nd revised and expanded edition. Odesa : Oldi+, 2024. 144 p. URL: https://dspace.mipolytech.education/items/576e43f6-64b1-4f62-b10d-a2c840b61c16.

Навчально-методичне видання

Хорошайло Олена Станіславівна
Довгаль Ірина Анатоліївна

АНГЛІЙСЬКА МОВА ДЛЯ ІНЖЕНЕРІВ ТА ТЕХНОЛОГІВ

методичні рекомендації до самостійної роботи здобувачів освіти першого (бакалаврського) рівня вищої освіти інженерних спеціальностей (перший курс)

Самостійне електронне мережеве видання
Публікується в авторській редакції