

**НАЦІОНАЛЬНИЙ УНІВЕРСИТЕТ
«ОДЕСЬКА ПОЛІТЕХНІКА»**

Кафедра іноземних мов

**МЕТОДИЧНІ ВКАЗІВКИ ДО ПРАКТИЧНИХ ЗАНЯТЬ
З НАВЧАЛЬНОЇ ДИСЦИПЛІНИ «ІНОЗЕМНА МОВА ЗА ПРОФЕСІЙНИМ
СПРЯМУВАННЯМ» ДЛЯ ЗДОБУВАЧІВ ДРУГОГО (МАГІСТЕРСЬКОГО) РІВНЯ
ВИЩОЇ ОСВІТИ ДЕННОЇ ТА ЗАОЧНОЇ ФОРМИ НАВЧАННЯ ІНСТИТУТУ
КОМП'ЮТЕРНИХ СИСТЕМ**

Одеса
Одеська політехніка
2025

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Затверджено на засіданні

кафедри іноземних мов

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Одеса
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2025

Методичні вказівки до практичних занять з навчальної дисципліни «Іноземна мова за професійним спрямуванням» для здобувачів другого (магістерського) рівня вищої освіти денної та заочної форми навчання Інституту комп'ютерних систем /Уклад.:Цапенко Л.Ю., Гвоздь О.В., Лебедева О.В.- Одеса: Національний університет «Одеська політехніка», 2025. 73 с.

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Вступ

Методичні вказівки до практичних занять з дисципліни «Іноземна мова за професійним спрямуванням» складаються з спеціальних текстів за темами, відповідно основним темам курсу та практичних завдань.

Для кожного практичного заняття запропоновано низку вправ, частину яких (у залежності від загального рівня фахової підготовки студентів) доцільно виконувати в аудиторії під керівництвом викладача. До комплексу вправ включено: репродуктивні вправи на рівні слова, словосполучення та речення; рецептивно-продуктивні вправи на рівні термінологічних відповідників, словосполучень та синтагм; рецептивно-продуктивні вправи на рівні текстів. Також запропонована велика кількість вправ, орієнтованих на переклад з іноземної мови на українську або з української на іноземну. Цілком доцільним є виконання вправ словотворчого характеру. Основною метою методичних вказівок є

- ✓ сформувати у студентів вміння та навички, необхідні для вільного орієнтування в основних поняттях та визначеннях, які застосовуються в термінології англійської мови;
- ✓ надати студентам знання щодо основних типів способів творення, структурно-семантичних особливостей, стилістичних та соціо-лінгвістичних функцій сучасних термінів;
- ✓ навчити студентів користуватися основними прийомами перекладу термінів у фахових та нефахових текстах.

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Lesson 1

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «Science and scientists», зокрема щодо значення та ролі science; удосконалити навички професійної комунікації англійською мовою, розширити термінологічний словник і сформувати здатність застосовувати англійську мову у фаховому середовищі.

Read the text: What is Science?

The word science originates from the Latin word «scientia», meaning knowledge. Science is simply a way of looking at the world. It consists of asking questions, proposing answers and testing them against the available evidence.

A popular astronomer Carl Sagan wrote: «Science invites us to let the facts in, even when they don't conform to our preconceptions. It counsels us to carry alternative hypotheses in our heads and see which best match the facts». Science is a human construct and human ability.

Types of Science Products

Facts □ are specific verifiable pieces of information obtained through observation and measurement

Concepts □ are abstract ideas that are generalized from facts or specific relevant experience.

Principles □ are more complex ideas based on several related concepts.

Theories □ consist of broadly related principles that provide an explanation for a phenomenon.

The purpose of a theory is to provide the best explanation based on evidence. Theories are used to explain, relate, and predict.

Students of science major in various fields of science. They take part in R&D at their institutions. The faculty and staff at the universities and institutes will help the students as they fulfill their academic and professional goals. Research advisors —well-known scientists will help their students with research. Graduate students spend most of their time in independent study and original research. For example, graduate studies in the USA can be divided into two phases:

Phase I leads to Master's degree and consists of lecture-type coursework. This degree is usually required in fields such as engineering, library science etc. The MBA or Master of Business Administration usually takes two years.

These degrees are considered stepping stones toward a PhD. Normally few, if any laboratory courses are offered. A thesis, calling for significant research and/or design effort may be required.

Phase II leads to doctoral degree — PhD (doctorate). Students who are enrolled in a doctoral program are known as PhD candidates. They will spend some time in class, but the most important work is spent in first-hand research. It may take three years or more to earn a PhD Degree. This degree normally requires four to six years of study beyond the Bachelor's degree, culminating in lengthy, in-depth, original research of a specific topic, which may be both theoretical and applied, or purely theoretical. Usually, doctoral studies focus very heavily on developing advanced scientific skills.

A PhD dissertation is considered a unique, original contribution to human knowledge. This paper must contain views, research or designs that have not been previously published. The best and the most suitable methods, techniques, approaches and procedures should be used.

Several research publications on issues relevant to the investigation should be prepared. Most universities awarding the PhD Degree also require doctoral candidates to have a reading knowledge of two foreign languages, to pass a qualifying examination that officially admits candidates to the PhD program, and to pass an oral examination on the same topic as the dissertation.

If the dissertation meets all the requirements it will be accepted and approved by a special board of academics after oral defense.

Most scientists spend many years studying and working in laboratories. Scientists can work individually or in a team. In many cases, scientists are devoted to their work and may find little time to do other things. Usually scientists are involved in studying various aspects of their fields, and work on one or two major projects at one time.

A good example of a dedicated scientist and researcher is U.S. neurosurgeon Benjamin Carson. Speaking to young people around the country, Carson always concludes with the same message: «Think big!» He explains the meaning of each letter:

T — is for talent. Recognize your God-given talent.

H — is for hope. Anticipate good things and watch for them.

I — stands for insight. Learn from people who have been where you want to go.

N — is for nice. Be nice to people — all people.

K — represents knowledge. Knowledge is the key to your dreams, hopes and aspirations.

B — is for books. We develop our minds by reading.

I — equals in-depth learning, where acquired knowledge becomes part of you.

G — stands for God. Never drop God out of your life.

«If you can learn to think big, nothing on earth will keep you from being successful in whatever you choose to do», says Carson. And eminent American astronomer Vera Rubin has given the following piece of advice to young scientists: «Don't give up. Remember that science is ever so vast; learn one thing very well. Doing so ... gives you great confidence, allows you to share knowledge with colleagues. It helps if you know what you really want to do. Work hard. Learn to give good talks. Be imaginative. If you are interested in science, you must have a fundamental curiosity».

1. Give Ukrainian equivalents of the following words and word combinations, learn them:

available, evidence, to conform, preconception, to major in, R&D, research advisor, to meet the requirements, board, devoted, insight, relevant.

2. Match the words with their meanings:

1. science	a) the desire to know or learn
2. field of science	b) a strong desire to do smth. or have smth.
3. faculty and staff	c) a title given by a university to a student who has completed a course of study
4. research	d) to direct one's attention to smth.
5. scientist	e) special ability to do smth. Well
6. Degree	f) a particular side of many-sided idea
7. to focus on	g) to take part, to participate
8. skill(s)	h) knowledge which can be made into a system
9. to be involved in	i) serious and detailed study of a subject
10. aspiration	j) all of teachers and other professionals
11. curiosity	k) a person who works in science
12. aspect	l) a branch of knowledge or area of activity

3. Match the word with the definition

Words:	Definitions:
1. Science	a) the desire to know or learn

2. Field of science	b) a strong desire to do smth. or have smth.
3. Faculty and staff	c) a title given by a university to a student who has completed a course of study
4. Research	d) to direct one's attention to smth.
5. Scientist	e) special ability to do smth. well
6. Degree	f) a particular side of many-sided idea
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10. Aspiration	j) all of teachers and other professionals
11. Curiosity	k) a person who works in science
12. Aspect	l) a branch of knowledge or area of activity

4. Use the correct word from the list to complete each sentence:

science, research, degree, scientist, skill, aspiration, curiosity, faculty, aspect, focus, involved, field of science

1. Marie Curie was a famous _____ who discovered radium and polonium.
2. He received his master's _____ in engineering last year.
3. The university's _____ and staff are working on a new project in renewable energy.
4. Medicine is an important _____ that saves millions of lives.
5. The student's _____ to become a doctor motivated her to study hard.
6. Good communication _____ are essential for successful teamwork.
7. His _____ about space led him to read every astronomy book in the library.
8. Before conducting the experiment, the team carefully planned their _____.
9. In her presentation, she will _____ on the effects of climate change.
10. Many students were _____ in the charity event organized by the campus.
11. Each _____ of the project needs to be carefully analyzed.
12. Physics is a branch of _____ that studies matter and energy.

5. Speak on one of the topics:

● **Science and Curiosity**

How does curiosity drive scientific discoveries?

Can you think of an example where someone's curiosity led to a major breakthrough in science?

● **Aspirations and Skills in Education**

Which skills are the most important for students to succeed in science today?

How do personal aspirations influence someone's choice of a field of science or career?

● **The Role of Research and Scientists in Society**

Why is research important for the development of society?

Should scientists focus more on practical problems (like medicine, climate change) or on pure research (like exploring space or quantum physics)? Why?

Test questions:

1. What are basic types of science products?
2. What skills must scientists have to conduct research?

Lesson 2

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «Science», зокрема щодо значення та ролі prominent scientists; удосконалити навички професійної комунікації англійською мовою, здатність працювати з різними джерелами.

Read the text: The Importance of Science

Science is the engine of prosperity. Economists have said that a third to a half of U.S. economic growth has resulted from basic research since World War II. The cars and trains that got us here today, our smart phones, the energy that lights this chamber, the clothes we wear, the food we eat: All of these were developed and improved through research.

But before these applications existed, researchers had to study the basic concepts that provided a sound foundation—and they did those studies not necessarily knowing where they would lead. I know Einstein wasn't thinking about GPS in smart phones when he formulated his theory of relativity a hundred years ago. But knowing how spacetime works helps make our measurements from orbiting GPS satellites accurate.

Thinking about science, Goethe once said: «To one man it is the highest thing, a heavenly goddess; to another it is a productive and proficient cow who supplies them with butter». The results of science and the motives for doing it are diverse.

Curiosity is the most powerful motivation for research professionals — and for many amateurs, too. Science clarifies, explains and occasionally predicts. Understanding a piece of universe can bring satisfaction and excitement to anyone.

One can do science because one believes that practically and effectively it benefits the world. A great many scientists have had this chief conscious reason. One can do science because it represents the truth. One can also do science because one enjoys it. Many people like unraveling puzzles. Scientific puzzles are very good ones, with reasonable prizes.

Science serves the missions of improving health, national security, energy, the environment and communications; it creates new products, meets the demands of emerging markets and satisfies social needs. But even strong faith in science may crack in straitened circumstances.

When it comes to future justification for curiosity-driven and mission-oriented research, we encounter three related undertakings.

First, we have to rethink the case from inside the scientific community. Government, businesses and universities must demonstrate that investments in science are the only way of fulfilling long-range goals. Research executives will have to document the ample returns from past investments and then outline future paths. Setting priorities will not be easy, and stern management to ensure excellence will be essential.

Second, we should broaden the dialogue. Society must be engaged in continuing exchange about national goals and research priorities. The press, industry, nonprofit organizations must participate.

Finally, we must expand the accessibility of knowledge. The entire professional community must pay more attention to building a scientifically literate society. Support for science, and for the benefits of technology, increases with educational level. To be successful in the twenty-first century, we need more science, not less.

1. Give Ukrainian equivalents for some characteristics of a scientist, learn them:

a positive approach to failure; open-mindedness; cooperation with others; tolerance for other opinions, explanations, or points of view; avoidance of broad generalizations when evidence is limited; demand for verification, longing to know and to understand; respect for logic; consideration for consequences.

2. Answer the questions:

1. Interpret Goethe's words concerning science. What does he mean? Why do people do science?
2. List the reasons for doing science.
3. What are the missions of science?
4. Comment on the problems concerning scientific development. What are the possible ways of solving them?
5. What should we do to be successful in the future?

3. Which adjectives below do you think go with a true scientist?

hard-working, lazy, punctual, reserved, emotional, enthusiastic, tolerant, well-dressed, ambitious, hurried, adventurous, dynamic, flexible, conscientious, talkative, considerate

Identify the characteristics of a scientist by matching the two columns.

I 1. Intelligent 2. objective 3. creative 4. open-minded 5. curious 6. talented 7. dedicated 8. persistent	a) receptive of arguments and ideas b) remaining at a task for a long amount of time to complete a task or project c) making observations and decisions based upon evidence, not personal opinion or hearsay d) very interested in working very hard, devoting a lot of time to complete a task or project e) producing new and original ideas and things, inventive f) having a high degree of mental capacity g) having or showing special abilities for a particular type of work h) eager to know or learn
II 1. decision-maker 2. communicator 3. designer 4. inventor	a) searching for new discoveries b) being able to make important choices or / and judgements c) creating new models or designs d) making opinions and information known and understood by others, sharing and exchanging opinions.

4. Choose the correct word and fill in the blanks.

product (produce)
production to produce

producer (s)
productive productivity

1. We had a very _____ meeting last week.
2. The two lasers combine _____ a powerful cutting tool.
3. The country's main _____ is oil.
4. New _____ methods have led to increased _____.
5. This country is one of the world's leading oil _____.
6. The wine bottle was marked «_____ of France».

(to) predict prediction predictable

7. The economists _____ an increase in the rate of inflation.
8. You're so _____!
9. It is hard _____ when it will happen.
10. His _____ turned out to be correct.

science scientific scientist

11. I'm fond of reading _____ fiction.

12. He is a famous _____.

13. I don't need any _____ proof.

to apply applied application(s)

14. This rule does not _____ in your particular case.

15. A new discovery has a number of industrial _____.

16. Her research is both theoretical and _____.

(to) require requirement(s) required

To carry out this plan would _____ increasing our staff by 20 %.

18. This monograph is _____ reading for our course.

19. Candidates who fail to meet these _____ will not be admitted to the university.

curious curiosity

20. There was an intense _____ about their plans.

21. I'm _____ about what happened.

(to) imagine imagination

imaginative

22. You can't _____ how surprised I was.

23. She has a vivid _____.

24. Be _____!

(to) develop development

25. This was an important stage in country's _____.

26. I'd like _____ my idea.

5. Speak on one of the topics:

- Think of a scientist from IT field of science who made a significant contribution to its development and present him/her and their achievements to the class.
- Why your field of knowledge is crucial for the economy of the country.
- What are the motives for doing science?

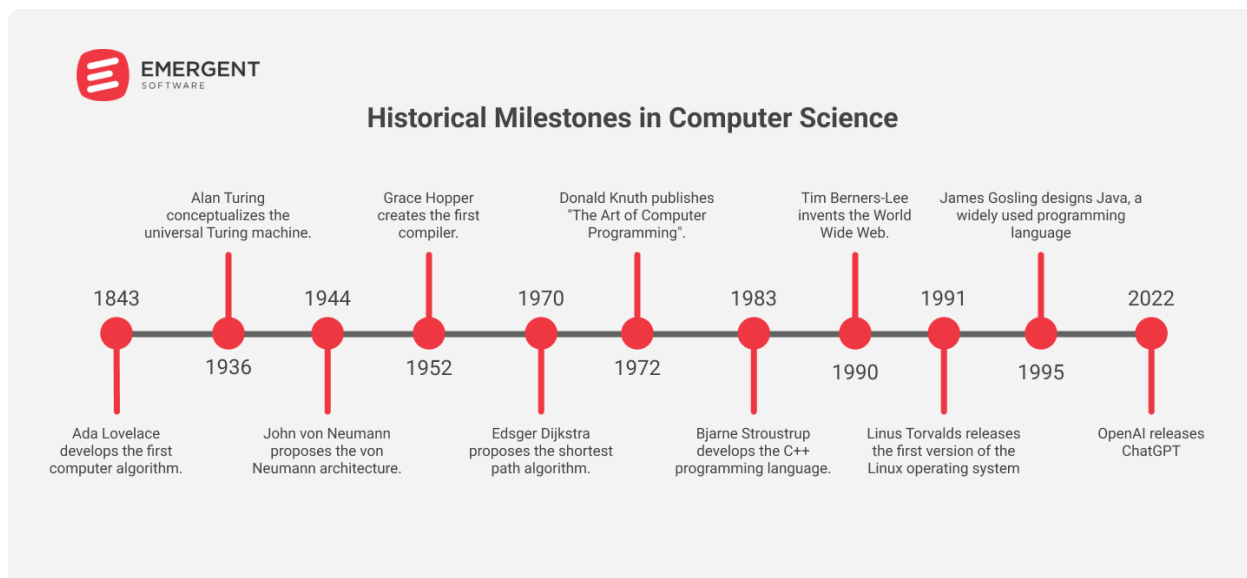
Test questions:

1. Explain the words: "Science is the engine of prosperity"
2. Give reasons for doing science.

Lesson 3

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «Famous Computer Scientists», здатність працювати з різними джерелами, розишукувати, обробляти, аналізувати і синтезувати отриману, розширити термінологічний словник і сформувати здатність застосовувати англійську мову у фаховому середовищі.

Read the text: Computer Scientists Who Changed Our World



The world of computer science as we know it has been shaped by the innovations of numerous computer scientists. These contributions over the past century have contributed to the development of popular programming languages, AI, and other computer programming standards.

While there are more important computer scientists to count, there are a few notable pioneers who have truly helped lay the foundation for the modern technological era.

This article will cover 5 of the most famous computer scientists and their contributions to the industry. From the creation of the first programming language to the creation of the Internet, these computer scientists have made a big impact in the world of computer science.

1. Alan Turing (1912-1954)

Alan Turing was born June 23, 1912, in London England. In his adult years, he worked as a mathematician and logician and made several important contributions to the fields of mathematics, computer science, and most notably, artificial intelligence.

After graduating from the University of Cambridge in 1934, he was elected to a fellowship at King's College where he continued his research of probability theory. During his time at King's College, he completed his seminal paper titled "On Computable Numbers with an Application to the Decision Problem."

This paper proved to be significant for the newly emerging science of computing. It was eventually recommended by publication by fellow mathematical logician Alonzo Church, who had published a paper with a similar conclusion.

Following the success of this publication, Turing moved to Princeton to begin his studies toward a Ph. D. in mathematical logic under Church's tutelage. He achieved his Ph. D. in 1938.

During this time, Turing made one of his biggest contributions to computer science, the Turing machine. The Turing machine is an abstract computing machine that encapsulates the fundamental logical principles of a digital computer.

The Church-Turing thesis used in Turing machine logic claimed that everything computable by humans could also be computed using the universal Turing machine. This proved to be an important theory as it marked out the limits of human computation.

After a stint working as a code breaker during World War 1, Turing was recruited by the National Physical Laboratory in London to work on creating an electronic computer.

He crafted a design for the Automatic Computer Engine (ACE) as the first complete version of an electronic stored-program digital computer. His design was not used, however, as his colleagues at NPL found the engineering too complex to complete, so a smaller version was built.

One of Turing's most notable achievements was advancements in AI. Turing is known as the founding father of artificial intelligence. He suggested early theories about the human brain being comparable to a digital computing machine that is trained to organize and comprehend information. Using this understanding of the human brain, he proposed the Turing test, which was used as a criterion for whether an AI model is thinking or not.

In 2022, with the rise of ChatGPT, new conversations about Turing's theory were ignited, pondering the likelihood that the AI model met the components of the Turing test.

2. Sir Tim Berners-Lee (1955 - Present)

Sir Tim Berners-Lee is the man credited for inventing the World Wide Web during his time at CERN. In 1990, he wrote the first web client-server and refined the specifications for URLs, HTTP, and HTML as the technology became more widespread.

Born in London in 1955, Berners-Lee was naturally gifted at computing. Both of his parents worked on the first commercial computer, the Ferranti Mark 1. After graduating from the University of Oxford in 1976, he began designing computer software for Plessey Telecommunications.

He began a stint at CERN in 1980 as a software engineering consultant. During this time, he began his work on Enquire, a program that could store data in files containing connections within and among separate files.

This technique later became known as hypertext. During a second stint at CERN in 1989, Berners-Lee drew up proposals for designing a global hypertext document system that used the Internet.

This would eventually lead him to create the software for the first web server and subsequent web browser. This would lead to the World Wide Web as we know it today, making Berners-Lee one of the most important computer scientists to have ever lived.

3. Linus Torvalds (1969 - Present)

Linus Torvalds was born in Finland in 1969 and is one of the most famous living computer scientists. He is credited for developing the Linux operating system, which is widely used around the world.

Torvalds began learning computer programming at a young age, using a Commodore VIC-20 owned by his grandfather. After purchasing his first personal computer in 1996, he felt unsatisfied with the operating system.

He much preferred the UNIX operating system that he had used on a university computer, prompting him to create his own PC version of UNIX. After months of work, the beginning of a new operating system was completed, Linux.

Shortly after, Torvalds made Linux available to the public and open source, allowing anyone with the computer knowledge required to modify Linux to meet their needs. This approach helped jump-start further development of Linux, with many programmers retooling and refining the software over time.

Linux currently accounts for most of the active servers used on the Internet and remains open-source and modifiable.

4. James Gosling (1955 - Present)

James Gosling is another well-known computer scientist of the 21st century. Born in Canada in 1955, he went on to create one of the most popular coding languages of all time, Java. After receiving his doctorate from Carnegie Mellon University, he would invent the Java programming language in 1991.

He created the initial design for the language and its compiler and a virtual machine. Java remains one of the most popular coding languages used all over the world.

5. Steve Jobs (1955-2011)

Steve Jobs likely needs no introduction, as he is arguably the most famous computer scientist of all time. As the co-founder of Apple, he helped revolutionize the entire tech industry using innovations that had never been seen before.

Born in California in 1955, he began his career in coding as a video game designer at Atari in 1974. After saving enough money to fund a pilgrimage to India, he returned to the US and reconnected with Stephen Wozniak, a friend currently working for Hewlett-Packard.

After learning that Wozniak was designing his own computer logic board, Jobs suggested going into business together.

This became a reality after Hewlett-Packard rejected Wozniak's design in 1976. The Apple 1 logic board was completed in Job's garage using money obtained from the sale of his old Volkswagen and Wozniak's programmable calculator.

Realizing that personal computers were the future, the two worked together to create the Apple 2 logic board, complete with a keyboard. The rest is history, as Jobs went on to revolutionize the tech industry with innovations like the iPhone, Mac personal computers, and iPads.

Now Apple has one of the most extensive collections of interconnected software and devices with a strong ecosystem.

There are countless computer scientists that have paved the way for the technology industry we know today. Each of the computer scientists on this list has made a lasting impact on the industry and has likely inspired many after them to continue innovating and taking the world of tech to places never reached before.

As time goes on, we will likely see more great minds and their contributions to computer science.

1. Give Ukrainian equivalents of the following words and word combinations, learn them:

Numerous, to shape, notable, contribution, probability theory, emerge, conclusion, encapsulate, convict, credit for, widespread, purchase, to meet one's needs, account for, compiler, extensive

2. Answer the questions:

1. What were Alan Turing's main contributions to the fields of mathematics and computer science?
2. How did the Turing machine influence the development of modern digital computers?
3. Why is Sir Tim Berners-Lee considered one of the most important figures in computer science?
4. What role did hypertext play in the creation of the World Wide Web?
5. How did Linus Torvalds' decision to make Linux open-source influence its global success?
6. Why is Java still considered one of the most popular and influential programming languages?

7. In what ways did Steve Jobs transform the personal technology industry?
8. What common qualities can you identify in the work and careers of all five scientists?

3: Match the terms with their definitions

Terms:	Definitions:
1. hypertext	A. a system software that manages computer hardware
2. compiler	B. software whose code can be modified and shared by users
3. open-source	C. a program that converts code into machine language
4. artificial intelligence	D. text connected by links to other texts
5. operating system	E. software that emulates a computer environment
6. virtual machine	F. the ability of a machine to imitate human thinking

4: Part A: Complete the sentences with the correct word:

innovation, contribution, computation, browser, logic, device

1. Alan Turing made a major _____ to the development of AI.
2. The first web _____ allowed users to navigate the early Internet.
3. Modern smartphones are powerful _____ capable of multitasking.
4. Berners-Lee's _____ changed the way people share information.
5. The Turing machine explores the limits of human _____.
6. Gosling created Java based on principles of object-oriented _____.

Part B: Use the correct form of the word in brackets:

1. Turing's work laid the _____ (found) for modern AI research.
2. Tim Berners-Lee is widely _____ (recognize) as the inventor of the World Wide Web.
3. Linux remains one of the most _____ (use) systems for servers.
4. Jobs was known for his _____ (create) approach to technology.

5. Choose the correct synonym

1. Turing made a **seminal** discovery in computing.
 - a) minor
 - b) original
 - c) unimportant
2. Berners-Lee's ideas quickly **spread** across the scientific community.
 - a) disappeared
 - b) expanded
 - c) slowed

3. Torvalds **released** Linux to the public.
 - a) published
 - b) hid
 - c) bought
4. Jobs **revolutionized** personal technology.
 - a) slightly changed
 - b) completely transformed
 - c) destroyed

6. Speak on one of the topics:

- **The Role of Innovation in Modern Computer Science**

How do innovations like the Turing machine, Linux, the Web, and Java still influence today's technologies?

- **Open-Source vs. Proprietary Software**

Discuss the contributions of Linus Torvalds and Steve Jobs.

Which approach — open-source or closed ecosystem — is better for technological progress?

- **Ethical Responsibilities of Computer Scientists**

Considering the impact of Turing, Berners-Lee, Torvalds, and others, what ethical duties do modern computer scientists have when creating new technologies?

Test questions:

1. Name prominent scientists in the field of Computer Technologies.
2. What role did hypertext play in the creation of the World Wide Web?

Lesson 4

Scientific Method

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «Scientific methods», здатність відслідковувати найновіші досягнення у професійній сфері та знаходити наукові джерела, які мають відношення до сфери наукових інтересів здобувача зокрема щодо значення та ролі scientific research.

Read the text: Scientific Method

The scientific method is a process for experimentation that is used to explore observations and answer questions.

Do all scientists follow the scientific method exactly? No. Some areas of science can be more easily tested than others. For example, scientists studying how stars change as they age or how dinosaurs digested their food cannot fast-forward a star's life by a million years or run medical exams on feeding dinosaurs to test their hypotheses. When direct experimentation is not possible, scientists modify the scientific method. But even when modified, the goal (and many of the steps) remains the same: to discover cause and effect relationships by asking questions, carefully gathering and examining the evidence, and seeing if all the available information can be combined into a logical answer. New information or thinking might also cause a scientist to back up and repeat steps at any point during the process. Understanding the steps of the scientific method will help you focus your scientific question and work through your observations and data to answer the question as well as possible.

Steps of the Scientific Method

1. Ask a Question

The scientific method starts when you ask a question about something that you observe: How, What, When, Who, Which, Why, or Where? For a science fair project some teachers require that the question be something you can measure, preferably with a number.

2. Do Background Research

Rather than starting from scratch in putting together a plan for answering your question, you want to be a savvy scientist using library and Internet research to help you find the best way to do things and ensure that you don't repeat mistakes from the past.

3. Construct a Hypothesis

A hypothesis is an educated guess about how things work. It is an attempt to answer your question with an explanation that can be tested. A good hypothesis allows you to then make a prediction:

"If _____/[I do this] _____, then _____/[this]_____ will happen." State both your hypothesis and the resulting prediction you will be testing. Predictions must be easy to measure.

4. Test Your Hypothesis by Doing an Experiment

Your experiment tests whether your prediction is accurate and thus your hypothesis is supported or not. It is important for your experiment to be a fair test. You conduct a fair test by making sure that you change only one factor at a time while keeping all other conditions the same. You should also repeat your experiments several times to make sure that the first results weren't just an accident.

5. Analyze Your Data and Draw a Conclusion

Once your experiment is complete, you collect your measurements and analyze them to see if they support your hypothesis or not. Scientists often find that their predictions were not accurate and their hypothesis was not supported, and in such cases they will communicate the results of their experiment and then go back and construct a new hypothesis and prediction based on the information they learned during their experiment. This starts much of the process of the scientific method over again. Even if they find that their hypothesis was supported, they may want to test it again in a new way.

6. Communicate Your Results

To complete your science fair project you will communicate your results to others in a final report and/or a display board. Professional scientists do almost exactly the same thing by publishing their final report in a scientific journal or by presenting their results on a poster or during a talk at a scientific meeting. In a science fair, judges are interested in your findings regardless of whether or not they support your original hypothesis.

1. Give Ukrainian equivalents of the following words and word combinations:

Modify, evidence, to back up steps, available information, observations, require, start from scratch, ensure, prediction, accurate, regardless, support

2. Answer the questions:

1. Why is the scientific method not always followed exactly the same way in every field of science?
2. How do scientists modify the scientific method when direct experimentation is impossible?
3. What is the main purpose of asking a scientific question at the beginning of the process?
4. Why is background research an essential step before designing an experiment?
5. What characteristics make a hypothesis “testable”?
6. Why must a scientific experiment be a “fair test,” and what does that mean in practice?
7. What are some reasons a hypothesis might not be supported by experimental data?
8. Why is communicating results an important part of the scientific method, even when the hypothesis is proven incorrect?

3. Match the terms with the definitions:

Terms:	Definitions:
1. hypothesis	A. a statement forecasting what will happen
2. variable	B. information or data used to support a claim
3. conclusion	C. an idea that can be tested through experiments

4. replicate	D. the outcome or final judgment based on analyzed data
5. evidence	E. to repeat an experiment to verify the results
6. prediction	F. a factor that can change in an experiment

4.Part A: Fill in the blanks with the correct words:

observe, analyze, measure, modify, conduct, gather

1. Scientists must _____ data carefully before drawing conclusions.
2. In some fields of science, researchers must _____ the scientific method to fit their limitations.
3. When conducting an experiment, it's important to _____ only one variable at a time.
4. Researchers _____ evidence through systematic investigation.
5. The first step in the method is often to _____ a natural phenomenon.
6. Students must _____ an experiment to test their hypotheses.

Part B: Use the correct form of the word in brackets.

1. Careful _____ (observe) is essential for reliable scientific research.
2. A hypothesis needs to be _____ (test) in order to be scientific.
3. Good scientists remain open to _____ (revise) of their ideas.
4. Data _____ (collect) must follow precise procedures.

5. Choose the correct option

1. A hypothesis must be...
 - a) impossible to test
 - b) measurable
 - c) based only on opinion
2. Scientists often need to...
 - a) repeat experiments
 - b) ignore unexpected results
 - c) avoid publishing negative findings
3. A fair test is one where...
 - a) several variables change at the same time
 - b) data is not recorded
 - c) only one variable is changed
4. Communicating results helps...
 - a) other researchers build on the findings
 - b) hide the method
 - c) prevent replication
5. Which of the following steps is not part of the Scientific Method:
 - Ask a question.

- Do background research about your question.
- Make a hypothesis and a prediction.
- Test the hypothesis by doing an experiment.
- Analyze your data.
- Draw conclusions.
- Communicate your data and conclusions.
- All of these are steps of the scientific method.

6. The Scientific Method is a process, used by every scientist in exactly the same way, to determine cause and effect relationships.

- True
- False

7. The Scientific Method is an iterative process. This means:

- New ideas or information might make a scientist back up and repeat parts of the scientific method.
- A scientist repeats the same experiment over and over until he or she proves the hypothesis true.
- Scientists using the Scientific Method must gather data that can be represented using numbers.
- The scientific method can be adapted to be used in all areas of science.
- All of the above.

8. Which of these words can a scientific question not start with?

- How
- Maybe
- Who
- What

All of these are words are good starts to a scientific question

9. A scientist only communicates the results of his/her experiment if they support his/her hypothesis.

- True
- False

5. Speak on one of the topics:

- **How reliable is the scientific method in fields where experiments cannot be done directly?**
Discuss examples such as astronomy, paleontology, climate science, or evolutionary biology.

- **Should scientists publish results even when their hypothesis is incorrect? Why or why not?**
Consider the importance of transparency, replication, and avoiding bias.
- **What are the ethical responsibilities of scientists when conducting experiments?**
Include issues like data honesty, avoiding manipulation, and responsible communication of findings.

Test questions:

1. What is a scientific method?
2. What are main steps of the scientific method?

Lesson 5

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «A research paper», зокрема щодо значення та ролі written reports; удосконалити навички професійної комунікації англійською мовою, розширити термінологічний словник і сформувати здатність застосовувати англійську мову у фаховому середовищі.

Read the text: WHAT IS A RESEARCH PAPER?

Definition of the research paper

The research paper is a typewritten paper in which you present your views and research findings on a chosen topic. Students usually work on the ‘term paper’ or the ‘library paper’ or the ‘diploma paper’, postgraduates work on their dissertations. No matter what the paper is called, the task is essentially the same: to read on a particular topic, evaluate information about it, and report your findings in a paper.

The research paper cannot be written according to a random formula but must conform to specific format. The format governs the entire paper from the placing of the title to the width of the margins, and to the notations used in acknowledging material drawn from other sources. The format of scholarly writing is simply an agreed-upon way of doing things – much like etiquette, table manners, or rules of the road.

Interpreting the facts

After gathering all the necessary information, you must decide upon the most logical way to present it. Perhaps the key word is logical because it is through logic that you will take disparate facts and order them into a meaningful pattern. Logic will help you to discover a pattern from the facts and the results of the study; discovering a pattern and developing a viewpoint are key issues in interpretation.

Clear presentation of information can be accomplished only if you take the time to think about your task before you begin to write. Presentation of information in a logical manner will be enhanced if you cover all aspects of your topic. In covering all aspects of the topic, you will find that you will have answered many of the readers’ questions before they have had a chance to ask them.

The following outline represents the various kinds of information that it is necessary to include in most technical reports. In addition, the outline breaks a long technical report down into these components: introduction, body, and conclusion. Part 1, labelled *The Problem*, consists of the kind of information that must be included in the introduction of any technical report.

I The Problem

Introduction to the Problem

Statement of the Problem

Background (summary of the known and the unknown)

Definitions of Unfamiliar Terms (Operational Terms for Experiment)

Value of Study or Experiment

Limitations of Study or Experiment

By stating the problem precisely, the writer clearly and concisely defines the writing task for the reader. If purpose is always in mind, clear presentation of ideas will not be far behind.

The other parts of the Problem section are self-explanatory except for the Definition of Unfamiliar terms. You should remember that it is necessary to define any word that the reader might not understand. This is the point of definition section of any report: to define the terms used in the reports so well that they are clear to the audience.

The next four steps of the outline represent the body of the report.

II Background Information

III Designing and Procedures of Important Experiments

IV Results of Experiments

V Discussion

First, you should give enough background information to demonstrate that you have some knowledge of the subject. Your next steps are to discuss the designs and procedures of your experiment and to list these results. In listing the results, if possible, use graphs and tables for clear presentation of facts and explain whatever is necessary from the graphs and tables. The discussion is not the place to introduce new ideas, this is just a discussion of the facts presented in the body.

VI Conclusions, Summary, Implications and Recommendations

The final part of the report is used to summarize the information, to state your interpretation of the patterns reported in the body of the report and to make any recommendations you think necessary. Whereas the body of the report is used to state the facts, the conclusion is used to state your interpretation of the facts. An interpretation should always flow logically from the information presented in the introduction and the body.

Abstract or Summary

An abstract or a summary highlights the most important ideas in the proposal, manual or dissertation. Abstracts or summaries are very helpful to people outside your scientific field so they need to be worded carefully in general, not scientific terms.

1. Give Ukrainian equivalents for the following words:

a research paper, research findings, postgraduates, to evaluate information, notations, acknowledging material, source, to discover, to develop a viewpoint, an outline, introduction, body, conclusion, to define, definition, background information, graphs and tables, summary, abstract.

2. Decide whether these statements are true or false:

1. Students' and postgraduates' research papers usually have polar tasks.
2. Research papers can be written according to a random formula.
3. Students should start to present information in the research work without wasting time on thinking over the structure of the paper.
4. The writing task for the reader should be defined in the introduction of the research work.
5. Terms are not to be defined in the paper as readers are good experts in the problem discussed.
6. Graphs and tables are strongly recommended when listing the results of the experiment.
7. Conclusions differ from the body of the report in the way of presenting the facts.

3. Match the columns.

- | | |
|-----------------------------|------------------------------------|
| 1. to present the views | a) посилювати, збільшувати |
| 2. random formula | b) охоплювати всі аспекти |
| 3. to conform to | c) безладна формула |
| 4. to evaluate information | d) упорядкувати непорівнянні факти |
| 5. to order disparate facts | e) знайомити із поглядами |
| 6. to cover all the aspects | f) підпорядковувати, погоджувати |

- | | |
|------------------------|-------------------------|
| 7. to enhance | g) стисло визначати |
| 8. to define concisely | h) оцінювати інформацію |

4. Find the words in the unit which have the opposite meaning to the words below.

- 1 to differ from _____
- 2 in detail _____
- 3 similar _____
- 4 colourless _____
- 5 to diminish _____
- 6 useless _____
- 7 approximately _____
- 8 scientific _____

4. Choose the word or phrase (a, b, c, d) that best keeps the meaning of the underlined word or phrase.

1. There are obvious disadvantages to this plan.
a. well-known b. serious c. clear d. fundamental
2. I tried to anticipate the kind of questions they were likely to ask me at the interview.
a. solve b. guess c. remember d. discuss
3. The problem would interest the entire community.
a. whole b. large c. engineering d. small
4. It is not easy to predict this trend.
a. cause b. create c. forecast d. test
5. The author discusses all facets of most engineering fields.
a. prospects b. aspects c. issues d. forms
6. Eventually, they have worked out the basic concepts.
a. lately b. spontaneously c. finally d. gradually
7. Most of our meetings were devoted to discussing scientific problems.
a. dedicated b. confined c. conformed d. introduced
8. The vast land stretches for hundreds of miles.
a. very small b. narrow c. very large d. spectacular
9. Is there any evidence for believing that?
a. proof b. tendency c. opposition d. chance
10. He employed the one basic technique.
a. process b. procedure c. task d. objective
11. She is very dedicated to her work.
a. interested in b. committed to c. tired of d. disappointed with
12. They devoted a lot of time for the in-depth study of botany.
a. independent b. individual c. thorough d. careful
13. He made no endeavor to help us.
a. effort b. decision c. plan d. prediction
14. Human beings are much more intelligent than animals.
a. invaluable b. realistic c. curious d. clever
15. Hopefully, I'll earn this degree in a year.
a. discuss b. get c. contain d. study
16. How is your study progressing?
a. topic b. investigation c. attempt d. procedure
17. The issue deals with international cooperation.
a. demands b. touches upon c. anticipates d. allows

5. Answer the questions.

1. What is a research paper?
2. Complete the ideas:
Students usually work on the
Postgraduates work on.....
3. What is the task of any research work?
4. The research paper cannot be written according to a random formula, can it?
5. What does the specific format of writing a research work govern?
6. What are the key issues in interpreting the facts?
7. What are the components of a technical report?
8. What information must be included in the introduction? Body? Conclusion?
9. What are abstracts or summaries? In what way must they be written?

Test questions:

1. What is a research paper?
2. How do we present information in the research paper?

Lesson 6

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики «Common types of graphs», удосконалити навички професійної комунікації англійською мовою, розширити термінологічний словник і сформувати здатність застосовувати англійську мову у фаховому середовищі.

Read the text: Common types of graphs

Graphs and charts can organize and present complex data making it easier for people to understand and are commonly used for business purposes. Knowing the difference between various types of graphs and charts can help you choose the best one for your project. In this article, we discuss the most common charts and graphs in business and how they are typically used.

Graphs vs. charts: What's the difference?

While many people use 'graph' and 'chart' interchangeably, they are different visuals. Charts are tables, diagrams or pictures that organize large amounts of data clearly and concisely. People use charts to interpret current data and make predictions. Graphs, however, focus on raw data and show trends over time.

Different types of graphs

You can choose from many types of graphs to display data, including:

1. Line graph

Line graphs illustrate how related data changes over a specific period of time. One axis might display a value, while the other axis shows the timeline. Line graphs are useful for illustrating trends such as temperature changes during certain dates.



2. Bar graph

Bar graphs offer a simple way to compare numeric values of any kind, including inventories, group sizes and financial predictions. Bar graphs can be either horizontal or vertical. One axis represents the categories, while the other represents the value of each category. The height or

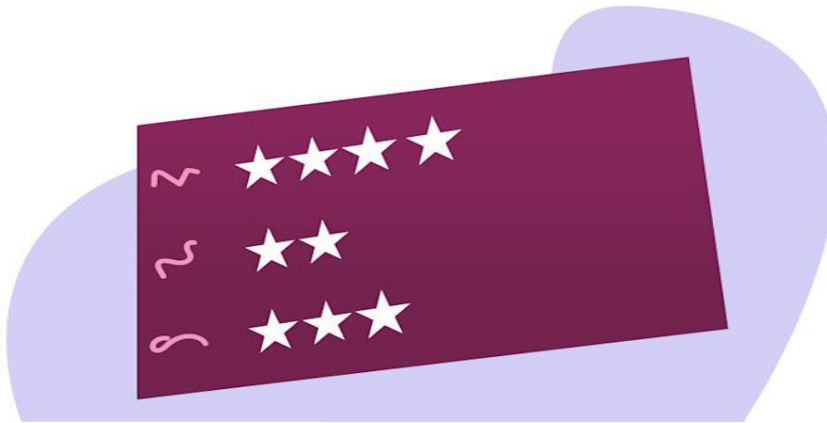
length of each bar relates directly to its value. Marketing companies often use bar graphs to



display ratings and survey responses.

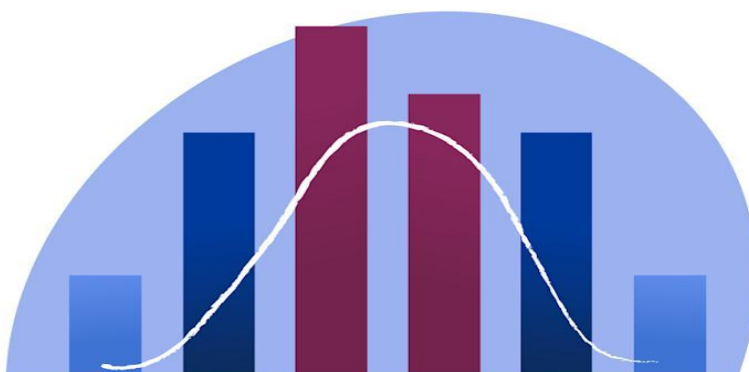
3. Pictograph

A pictograph uses pictures or symbols to display data instead of bars. Each picture represents a certain number of items. Pictographs can be useful when you want to display data in a highly visual presentation such as an infographic. For example, you could use a picture of a book to display how many books a store sold over a period of a few months.



4. Histogram

A histogram is another type of bar graph that illustrates the distribution of numeric data across categories. People often use histograms to illustrate statistics. For example, a histogram might display how many people belong to a certain age range within a population. The height or length of each bar in the histogram shows how many people are in each category.



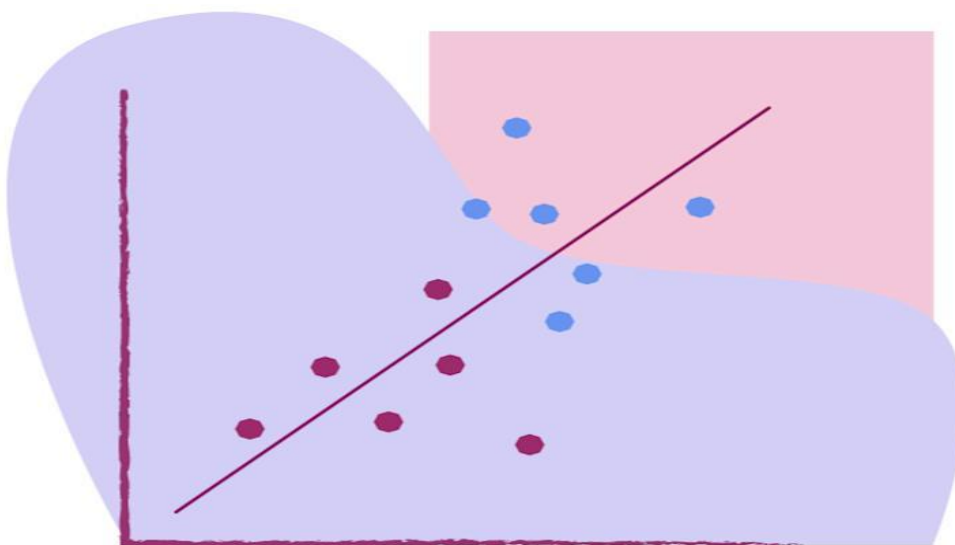
5. Area graph

Area graphs show a change in one or more quantities over a certain period of time. They often help when displaying trends and patterns. Similar to a line graph, area graphs use dots connected by a line. However, an area graph involves coloring between the line and the horizontal axis. You can use several lines and colors between each one to show how multiple quantities add up to a whole. For example, a retailer might use this method to display the profits of different stores over the same timeframe.



6. Scatter plot

Scatter plots use dots to depict the relationship between two different variables. Someone might use a scatter plot graph to show the relationship between a person's height and weight, for example. The process involves plotting one variable along the horizontal axis and the other variable along the vertical axis. The resulting scatter plot demonstrates how much one variable affects the other. If there is no correlation, the dots appear in random places on the graph. If there is a strong correlation, the dots are close together and form a line through the graph.



1. Give Ukrainian equivalents for the words. Memorize them:

Interchangeable, visualize, interpret current data, concisely, make predictions, interchangeably, focus on, raw data, specific period of time, numeric values, height or length of

each bar, display ratings/data, distribution, trend, pattern, timeframe, plot variables along the horizontal/vertical axis, affect, strong correlation

2. Answer the questions:

1. What is the main difference between a graph and a chart?
2. Why are graphs and charts useful in business and technical fields?
3. What type of data does a line graph show best?
4. How does a bar graph represent data, and what do its axes usually show?
5. What makes a pictograph different from other types of graphs?
6. In what situation would you use a histogram instead of a bar graph?
7. What does a scatter plot show, and what can you learn from the pattern of the dots?

3. Match each type of graph (1–6) with its function (A–F).

Type of graph	Function
1. Line graph 2. Bar graph 3. Pictograph 4. Histogram 5. Area graph 6. Scatter plot	A. Shows correlation between two variables using dots B. Uses pictures or icons to represent data visually C. Compares data in ranges, often used for statistics D. Displays trends over time using lines and points E. Compares categories using bars of different lengths F. Shows total quantities over time with color-filled areas

4. Study words and phrases connected with the topic and give your own examples:

Vocabulary on Graphs & Charts.

Word / Phrase	Definition	Synonym / Related Term	Example Sentence
Data	Facts or statistics collected for analysis	information, figures	The software processes large amounts of data every second.
Variable	A quantity or value that can change	factor, element	The graph shows how one variable affects another.
Axis (plural: axes)	A reference line on a graph; usually horizontal (x-axis) or vertical (y-axis)	coordinate line	The x-axis shows time, and the y-axis shows CPU usage.
Value	The numerical amount represented on a graph	figure, quantity	Each bar shows the sales value for one month.
Trend	The general direction in which something changes	pattern, tendency	The line graph indicates a rising trend in energy consumption.
Distribution	The way data points are spread over a range	spread, range	The histogram shows the distribution of response times.
Correlation	The relationship between two or more variables	connection, link	There is a strong correlation between temperature and performance.

Category	A group or type used for classification	group, section	Each category in the bar chart represents a software module.
Range	The difference between the smallest and largest values	span, scope	The temperature range for testing was between 0°C and 100°C.
Interval	A fixed space between data points on a scale	gap, segment	Each interval on the histogram represents 5 units of time.

5. Fill in the gaps with the following words. There are two words that you don't need:

categories, pattern, timeline, icons, correlation, value, trend, axes,

1. Line graphs show how data changes over a specific _____.
2. In a bar graph, each bar represents a different _____.
3. A pictograph uses _____ or symbols to represent numbers.
4. Scatter plots demonstrate the _____ between two variables.
5. The height of a bar in a bar graph represents its _____.
6. An area graph can show how a _____ changes over time.

6. Speak on one of the topics:

- Which type of graph do you think is most effective for IT/science projects (e.g., showing software performance, system load, or user activity)? Why?
- How can data visualization help software engineers or programmers make better decisions?
- Describe a situation from your studies or work where you would use a scatter plot or histogram.

Test questions:

1. What is the difference between graphs and charts?
2. What types of graphs are used in IT reports?

Lesson 7

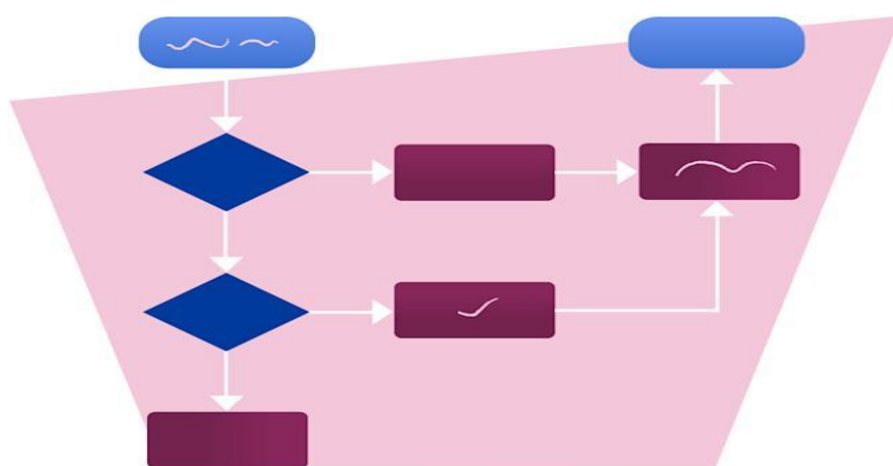
Мета: Сформувати у студентів здатність розуміти, аналізувати й використовувати англомовну інформацію з теми «Charts» для професійних і навчальних цілей; розширити англомовний термінологічний запас; розвинути навички комунікації англійською мовою.

Read the text: Application of charts in scientific projects

There are seven common charts you can use to display information:

1. Flowchart

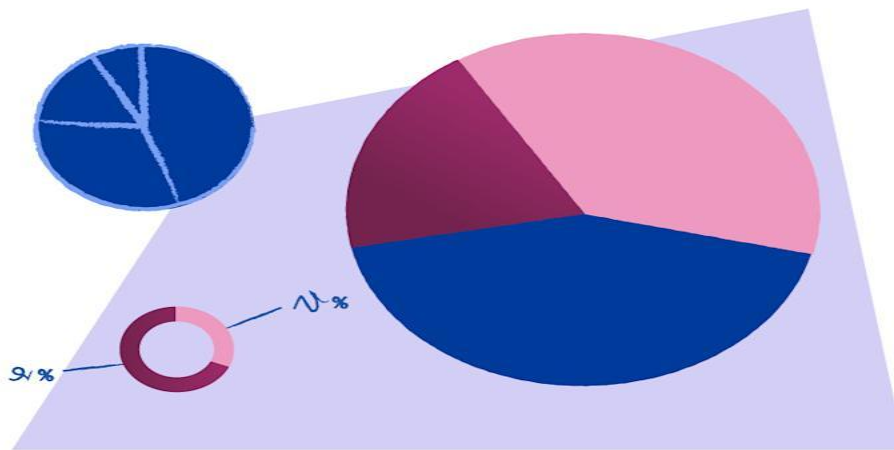
Flowcharts help organize the steps, decisions or actions in a process from beginning to end. They often include more than one starting point or endpoint, displaying different paths you can take in a process to get from start to finish. People often use flowcharts to depict complex situations. They use special shapes to illustrate different parts of the process, and they typically include a legend to explain what each shape means.



2. Pie chart

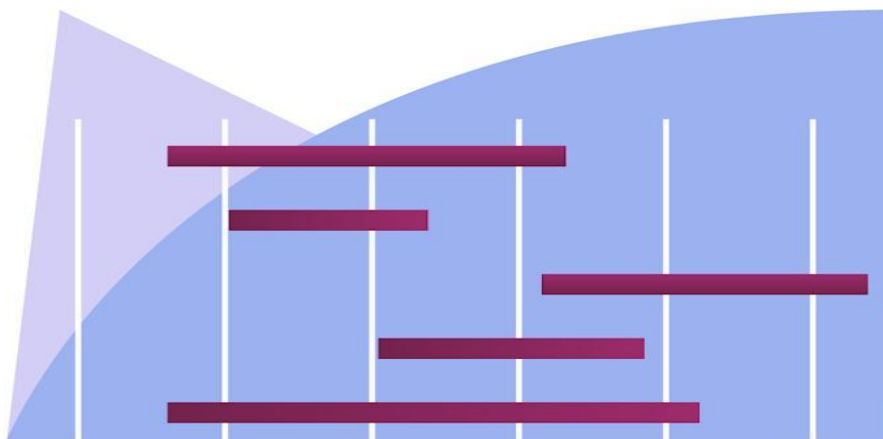
A pie chart presents the different parts of a whole. It looks like a circle divided into many pieces, much like a pie cut into slices. The pieces are different sizes based on how much of the whole they represent. Each piece usually has a label to represent its value compared to the whole. Professionals can use pie charts in business presentations to demonstrate population

segments, market research responses and budget allocations.



3. Gantt chart

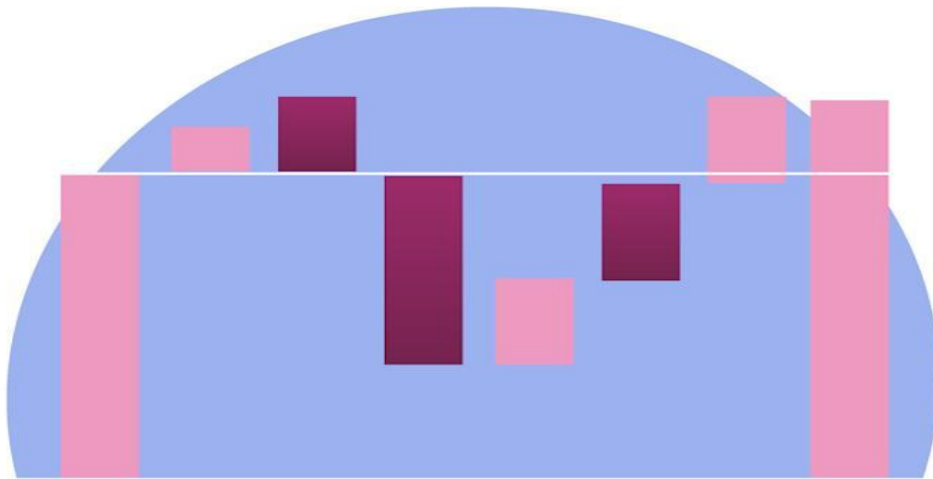
Gantt charts illustrate project schedules. The horizontal axis represents the timeframe for the project in days, weeks, months or years. The chart displays each project task as a bar on the vertical axis. The length of the bar depends on the start and end date of the task, but sometimes there is also a vertical line for the current date. Project managers use Gantt charts to monitor the progress and completion status of each task.



4. Waterfall chart

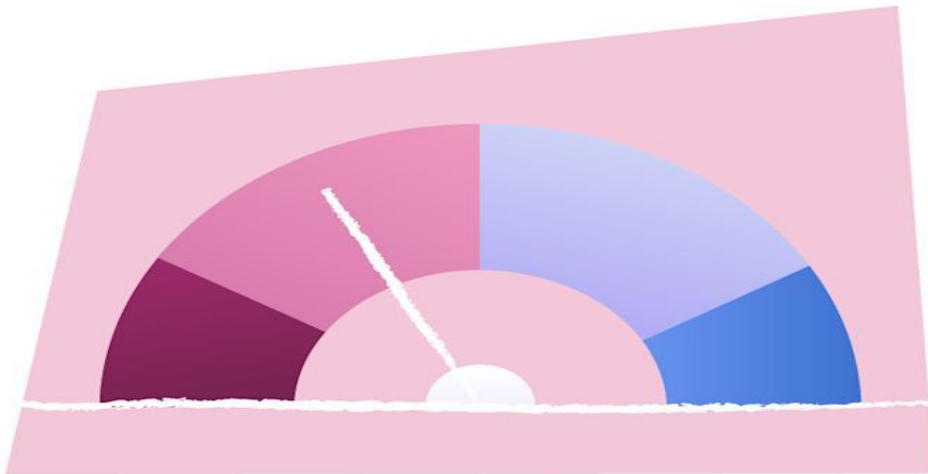
Waterfall charts reflect variance over time. They demonstrate both the positive and negative impact of different factors on an initial value, such as an opening balance. Waterfall charts are helpful when illustrating financial statements, analyzing profit and loss and comparing earnings. You might use this chart to highlight the budget versus the amount spent. Positive and negative values usually follow a color code to show how the value increases or decreases due to a series

of changes over time.



5. Gauge chart

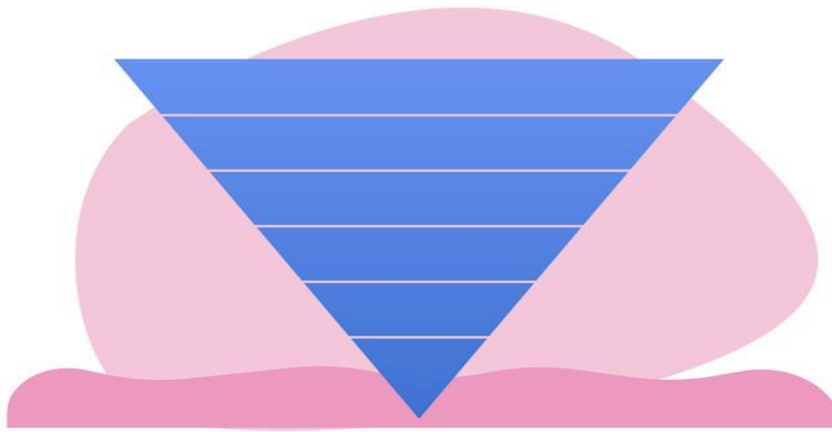
Gauge charts display data as a reading on a dial. They show where a specific data point is within a minimum or maximum range. A needle depicts the value within a scale. Many people use gauge charts to illustrate speed, revenue goals and temperatures.



6. Funnel chart

Funnel charts illustrate how values progress through different stages. They are widest at the top and narrowest at the bottom. Funnel charts are especially helpful when tracking a sales process. They also work well to depict website traffic, including the number of visitors to a site, the pages viewed and downloads made. Order fulfillment is another common use for funnel

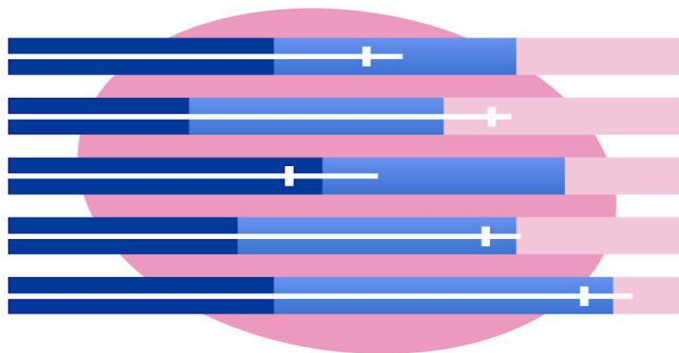
charts, as they can easily show the “number of orders placed, canceled and delivered.



7. Bullet chart

A bullet chart can help you measure the performance of a specific goal or target. Some bullet charts, such as those that demonstrate profits, have high targets. Others have low targets, including those that display expenses. People often use bullet charts in dashboards to illustrate the progress of key performance indicators (KPIs). A bullet chart is similar to a bar graph and consists of three parts:

- A line showing the target value
- A center bar showing the actual value
- Colored bars showing performance indicators



1. Give Ukrainian equivalents for the words. Memorize them:

Flowcharts, depict, represent, a pie chart, represent the timeframe, gantt chart, monitor the progress, completion status, waterfall chart, due to, gauge chart, funnel chart, to track, fulfillment, bullet chart, high target, dashboard, target value

2. Answer the questions:

1. What is the main purpose of a flowchart?
2. How is a pie chart structured, and what kind of data does it represent?
3. What information does a Gantt chart show?
4. In what situations can a waterfall chart be especially useful?
5. What does a gauge chart look like, and what kind of information does it display?
6. How does a funnel chart demonstrate progression through stages?
7. What are the three main components of a bullet chart?

3. Match each type of chart (A) with its correct definition (B).

A	B
1. Funnel chart	a) Tracks project timelines and tasks over time
2. Gauge chart	b) Displays progress toward a target or KPI
3. Flowchart	c) Shows how values move through stages
4. Gantt chart	d) Illustrates process steps and decisions
5. Bullet chart	e) Looks like a dial with a needle showing a value

4. Study words and phrases connected with the topic and give your own examples:

Vocabulary on Graphs & Charts.

Outlier	A data point that is significantly different from others	exception, anomaly	The outlier in the data indicates a possible measurement error.
Scale	The system of marks or numbers used for measurement on a graph	proportion, ratio	Use the same scale on both axes for accuracy.
Legend / Key	The part of a chart that explains what symbols or colors mean	label, indicator	The legend shows which color represents each programming language.
Label	Text describing data or axes	title, tag	Always include labels for your axes in the report.
Plot	To place data points on a graph	chart, draw	The software automatically plots real-time traffic data.
To illustrate	To show or explain something clearly	demonstrate, depict	The diagram illustrates how data flows through the network.
To analyze	To examine data carefully to understand it	evaluate, study	Engineers analyze the results before optimizing performance.
Visualization	The graphical representation of data	depiction, graphic	Data visualization helps users understand complex statistics.
Insight	A deep understanding of something through data	understanding, discovery	The scatter plot provides insight into system performance.

5. Complete the sentences using the correct form of the Passive Voice.

- Flowcharts _____ (use) to explain complex processes. (Present Perfect)
- Pie charts _____ (often / use) in business presentations. (Present Indefinite)
- Gantt charts _____ (create) to track project tasks. (Future Simple)

4. Bullet charts _____ (design) to show performance against goals. (Past Indefinite)
- 6. Write 4–5 sentences describing which chart you would use for an IT project and why.**
- Use the following words:** *data, process, visualize, performance, progress.*

Test questions:

1. How charts are used in IT projects and reports?
2. What is the main purpose of any chart?

Lesson 8

Мета: Сформувати у студентів здатність розуміти, аналізувати й використовувати англомовну інформацію з теми «Graphs and Charts» для професійних і навчальних цілей; здатність вільно спілкуватися державною та іноземною мовами усно й письмово для обговорення професійних проблем і результатів діяльності у сфері автоматизації та комп'ютерно-інтегрованих технологій, презентації результатів досліджень та інноваційних проектів.

Describing graphs and Charts

1. Fill in the gaps with the following words:

Charts, histogram, correlation, outliers, data visualization, illustrate, scatter plot, arrive at insights, analyze, line, bar graph, distribution, decisions, legend

Data Visualization in IT Projects

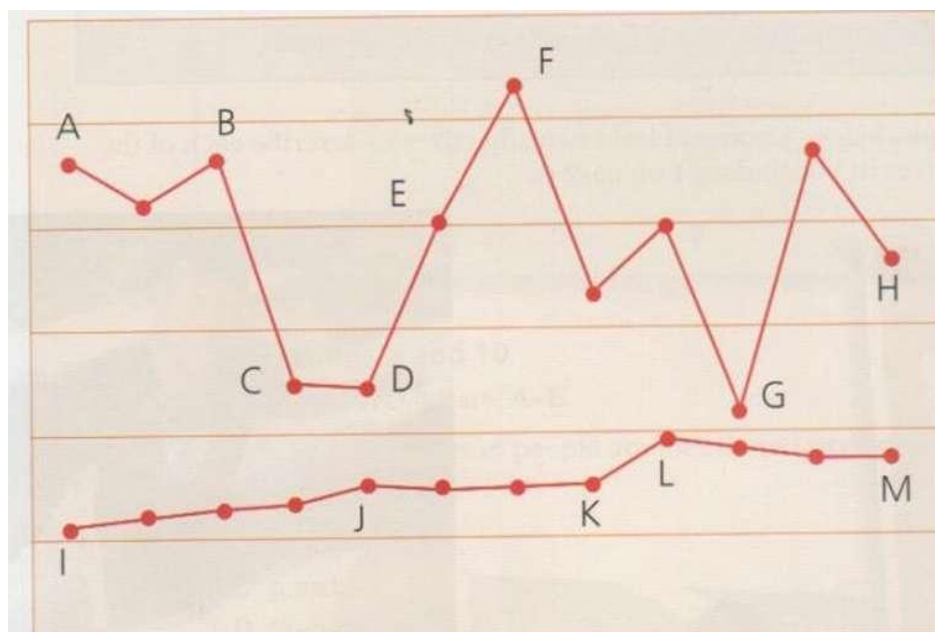
In modern IT projects, 1. _____ plays a vital role in helping teams 2. _____ large sets of performance data. Engineers often collect information from servers, networks, or software logs and present it using graphs and 3. _____ to identify patterns or problems quickly.

For example, a 4. _____ graph can 5. _____ the change in network speed over time, while a 6. _____ can compare server response times across different regions. When engineers want to study the 7. _____ between two variables—such as memory usage and application speed—they use a 8. _____.

A 9. _____ helps visualize the 10. _____ of response times to see whether the system performs consistently or if there are 11. _____ that might indicate errors. Adding clear labels and a 13. _____ ensures that anyone reading the chart can easily understand what the data represents.

By studying these visuals, IT specialists can 14. _____ that help them optimize system performance, improve user experience, and make better 15. _____ in future deployments.

2. Match the parts of the graph 1-10 with the verbs a-j.



1	A-B	a	hit a low
2	B-C	b	fell and then levelled off

3	B-D	c	remained flat/stable
4	D-F	d	plummeted
5	F	e	rose gradually
6	F-H	f	fell gradually
7	G	g	soared
8	I-J	h	dipped
9	J-K	i	fluctuated
10	L-M	j	hit a peak

3. For sentences 1-10 below, use the verbs in exercise 1 to replace the underlined text.

- 1 The **price** of laptops dropped followed by a period of stability.
- 2 Numbers reached a high in the year 2009.
- 3 The amount of money spent fell slightly and then quickly recovered.
- 4 Visitor numbers to the website plunged in the first quarter of the year.
- 5 Book purchases increased slowly but surely over the year.
- 6 The number of students applying to the university stabilized over the decade.
- 7 Attendance at the conference decreased steadily last year.
- 8 The growth rate was erratic during the previous year.
- 9 Member numbers reached their lowest point in March.
- 10 10 Car sales rocketed over the period.

4. To add variety to your writing you can use nouns instead of verbs to describe movement.

Look at the nouns in the box below and decide which ones are not correct.

a drop a plunge a bottom out an increase stabilization fluctuations a decline a rocket a soar a plummet arise a dip a fall a level off a climb a peak a surge

5. Rewrite the sentences from exercise 2 using nouns instead of verbs. Use the following structure: *There was a (+ adjective) + noun + in* For three of the sentences this is not possible. Make any other necessary changes.

Example:

There was a drop in the price of laptops followed by a period of stability.

6. Read the Task 1 question below and the three introductions a-c which follow. Decide which is the best introduction and why.

Task 1

The graph below provides a breakdown of the UK weekly market share of visits to three social networking websites between March 2007 and March 2008. Write at least 150 words.

Summarise the information by selecting and reporting the main features, and make comparisons where relevant.

UK Weekly Market Share of VisiK



- The *graph* below shows in percentage terms the UK weekly market share of visits to three websites between March 2007 and March 2008.
- The chart below shows the *percentage of hits* to three websites over the period of a year.
- The chart illustrates the market share of hits to various social networking sites in the UK on a weekly basis *over one year to* March 2008.

7. Complete the gaps in the following model answer for the task with the correct form of a suitable verb. There may be more than one possible answer.

The graph 1 _____ the proportion of hits to three social networking sites on a weekly basis from 10th March 2007 to 8th March 2008. Generally speaking, the trends in the market share of the three sites 2 _____. The most viewed site 3 _____ clearly www.facebook.com, whose share of the market 4 _____ dramatically from approximately 0.25 per cent on 10th March 2007 to 1.96 per cent on 8th March 2008. This 5 _____ nearly an eightfold increase over the period. It 6 _____ noticeable that the market share of Facebook 7 _____ of around 2.2 per cent during December 2008, with peaks being hit by the other two sites during the same period.

The market share of hits to the Bebo site, meanwhile, 8 _____ at a slower pace from about 1.2 to 1.44 per cent, a rise of approximately 40 per cent. In contrast to the other two websites, the market share of www.myspace.com 9 _____ decreasing from approximately the same level as www.bebo.com on 10th March 2007 to 0.89 percent.

Test questions:

1. What verbs describe rise and fall?
2. How do we describe small changes over a longer period/ a fast change over a shorter period of time?

Lesson 9

Мета: Розвинути в студентів уміння читати, розуміти та аналізувати автентичні тексти англійською мовою з професійної тематики « Mathematical modeling », зокрема щодо значення та ролі знаків безпеки; удосконалити навички професійної комунікації англійською мовою, розширити термінологічний словник і сформувати здатність застосовувати англійську мову у фаховому середовищі.

Read the text: Mathematical models and optimization techniques

Mathematical modeling is becoming an increasingly important subject as computers expand our ability to translate mathematical equations and formulations into concrete conclusions concerning the world, both natural and artificial, that we live in. Mathematical modeling in software engineering refers to the use of mathematical sciences (concepts and techniques) to represent and analyze software systems and their behavior. At the end of the mathematical modeling process, a mathematical model is obtained.

Why use mathematical modeling in a software project?

- **It helps in analyzing complex systems:** Mathematical models can be used to represent complex real-world systems in a simplified manner. This helps in analyzing the behavior and dynamics of the system. The knowledge gained from the models can then be used for beneficial operation of the software system.
- **Software model become formalized and standard:** Once the real-world problem is turned into a mathematical model and validated by the software design team, that model becomes the standard that drives software production by improving understanding of the system.
- **Easy communication:** Mathematical modeling gives software teams a systematic method for communication using the language of mathematics. It enables the sharing of clear, objective and reusable ideas which can facilitate collaborative progress. Mathematical models provide an excellent medium for documentation and institutional knowledge sharing within teams.
- **we can easily apply the techniques and mathematical tools to analyze our model ...**
- **Real world problem:**

The WHO African region carries a disproportionately high share of the global malaria burden. In 2021, the region was home to 95% of malaria cases and 96% of malaria deaths. Children under 5 accounted for about 80% of all malaria deaths in the Region. (Source: WHO)

- **An example solution using software:**

— Topic: Mobile app to search for an appropriate hospital in order to receive treatment for malaria

— Research problem: “Lack of possibilities and incapability to receive good treatments for malaria.”

It is a question here of setting up a mobile platform that will allow African populations to search for hospitals according to a set of criteria that represents their situation: such as the distance to get to the hospital, the cost of treatment for malaria, the reputation (or efficiency in malaria treatment) and the type of hospital. Knowing that hospitals are inserted into the platform by an administrator after verification of the compliance of this health structure.

- **Mathematical model**

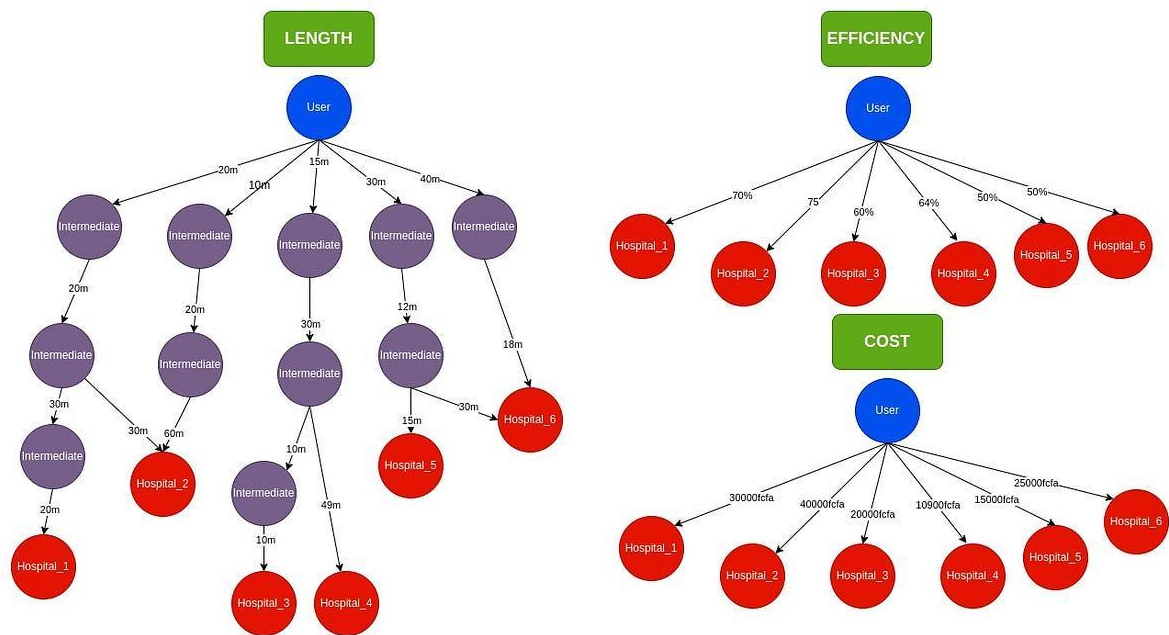
let $G=(V,E)$ a weighted directed graph where V is the set of nodes and E is the set of edges.

The set of nodes V contains three types of nodes:

1. User nodes $u \in V$, representing the starting nodes where the search for the hospital begins.
2. Hospital nodes $h \in V$, representing the destination nodes where users want to go.
3. Intermediate nodes $c \in V$, representing intermediate nodes (Crossroad, Street, hotel, restaurant...) that are important for navigation and pathfinding.

The graph G can also include additional information such as:

1. Node attributes: Each node in V can have additional attributes such as its geographical location, type (user, hospital, Intermediate), And information relating to its type.
2. Edge attributes: Each edge in E can have additional attributes such as its length, cost of malaria treatment, hospital malaria treatment efficiency (reputation) , hospital type or total hospital weight when applying AHP in these criteria,
3. graphical illustration of our model



Once the graph is constructed, Dijkstra's algorithm can be applied to find the shortest path from a user to a hospital as follow:

1. Initialize the distance to all nodes as infinity except for the starting node u , which is set to 0.
2. Set a priority queue to hold the nodes to be visited, with the starting node as the first entry.
3. While the priority queue is not empty, do the following:
 - a. Remove the node with the smallest distance from the priority queue.
 - b. For each of its neighboring nodes (c or s), calculate the distance to that node as the sum of the distance to the current node and the weight of the connecting edge.
 - c. If the calculated distance is smaller than the current distance to that node, update the distance and add the node to the priority queue.
4. When the priority queue is empty, the distances to all nodes have been calculated. The shortest path from the starting node (user u) to the hospital can then be determined by backtracking through the nodes with the smallest distance until the hospital is reached.

Conclusion

Mathematical modeling is of vital importance in software engineering, and provides us with many tools to better understand and analyze our model. As we have seen, the use of graphs allows us to exploit graph theory through famous algorithms such as Dijkstra's and Floyd-Warshall's algorithms. So it's important to choose your mathematical tools carefully, depending on the problem you want to solve.

1. Read, translate and memorize using a dictionary:

mathematical equation, conclusion, concern, objective, nonlinear programming problem, added value, stock, compute, minimize loss, multiple decision variables, outcome variable, yield a solution, validate.

2 Answer the questions:

- 1) What is the goal in all modeling problems?
- 2) What factors can make optimization problems fairly complex?
- 3) Why is mathematical modeling becoming an increasingly important subject?
- 4) Why do we need a graph?
- 5) Why is it necessary to choose your mathematical tools carefully?

3. Fill in the blanks with the suitable words:

Simplicity, aspect, models, analyzed, interpret, application, reliable, challenges, determining, usability,

Effective mathematical models strike a balance between 1. _____ and accuracy. Simplicity enhances understanding and practical application, making 2. _____ accessible and user-friendly. Accuracy ensures that models closely represent reality, providing 3. _____ predictions and actionable insights.

Another critical 4. _____ is the ability to draw meaningful conclusions from data. Well-constructed models enable decision-makers to 5. _____ results effectively and make informed choices. Striking the right balance between complexity and 6. _____ is essential, as overly complex models can hinder comprehension and practical 7. _____. Expert judgment is equally important, as models alone can be misleading if not 8. _____ and applied correctly, underscoring the role of human expertise in the modeling process.

Assumptions play a central role in modeling, 9. _____ which factors are included. Incorrect assumptions, however, can lead to flawed outcomes. Data quality is equally crucial; poor or insufficient data can result in inaccurate predictions.

Additionally, the complexity of some AI models can make their predictions difficult to interpret, posing challenges for transparency and understanding. Models may also misrepresent risks, particularly tail risks, which can result in poor decision-making in fields such as finance. These 10. _____ highlight the need for careful design, validation, and expert oversight when developing and using mathematical models.

4. Match the terms with their definitions:

Terms:	Definitions:
1. Optimization 2. Constraint 3. Decision variable 4. Objective function 5. Nonlinear programming 6. Uncertainty	A. A quantity that can be controlled or changed in a mathematical model. B. A restriction that limits possible solutions. C. A situation where outcomes cannot be predicted with certainty. D. A mathematical expression that is to be maximized or minimized. E. Finding the best possible solution from available alternatives.

	F. A type of problem in which equations or relationships are not linear.
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5 Fill in the blanks using words from the box:

linear, multiple, constraints, relationships, added value, complexity, risk, maximize

1. Mathematical modeling aims to create _____ by generating useful new insights.
2. When equations are _____, the optimization problem is simpler.
3. Real-world problems often include _____ variables that interact.
4. Complex _____ between variables make optimization difficult.
5. Firms often try to _____ profit by choosing optimal output levels.
6. Limited resources impose _____ on decision-making.
7. _____ is introduced when outcomes cannot be predicted accurately.
8. A large number of variables increases the _____ of the problem.

6 Choose the correct word or phrase:

1. Optimization techniques aim to find the _____ solution.
a) approximate
b) worst
c) best
2. A model without practical relevance becomes an exercise in _____.
a) value creation
b) futility
c) innovation
3. Complex constraints often arise from limited _____.
a) resources
b) celebrations
c) entertainment
4. Public policy decisions are hard to optimize because benefits are _____ to measure.
a) simple
b) impossible
c) difficult
5. Differentiation is used to solve _____ and minimization problems.
a) maximization
b) translation
c) communication

7. Speak on one of the topics

- **The Role of Mathematical Modeling in Engineering and Decision-Making**

Why is modeling becoming increasingly important in engineering fields?

How does computational power influence modeling accuracy?

Can a model be considered useful if it only partially represents reality?

- **Challenges in Real-World Optimization Problems**

How do multiple decision variables complicate optimization tasks?

What types of constraints do engineering firms typically face?

Why is uncertainty a critical factor in optimization problems?

- **Linear vs. Nonlinear Programming in Engineering Applications**

What makes nonlinear programming more complex than linear?

Which engineering problems are best modeled with linear programming?

Why is understanding differentiation important for optimization?

Test questions:

1. What does mathematical modeling in software engineering refer to?
2. What is the goal in all modeling problems?

1.

Lesson 10

Мета: Сприяти формуванню професійно орієнтованої іншомовної компетентності студентів шляхом опрацювання автентичного тексту англійською мовою на тему «Job rewards»; розвинути навички аналізу, перекладу та практичного застосування англomовних матеріалів у професійних ситуаціях.

Read the text: Work and Pay in X-country

I had a thought-provoking dream last night. In it, I was living in Fantasia - a place where people are paid according to their real value to society. There are some striking mismatches with what happens in other countries.

In Fantasia, doctors are paid for keeping people alive. A doctor is well rewarded as long as his or her patients stay healthy. But when a patient falls ill, the doctor's pay is reduced by half; and if a patient dies, the doctor has to pay massive compensation to the surviving spouse or relatives. Average life expectancy in Fantasia is 132, although doctors tend to die young.

Soldiers are paid on the same lines as doctors. In peacetime they get a reasonable wage, but as soon as war breaks out the government stops paying them. Officers earn far less than ordinary soldiers, and generals get least of all. This is because of the Fantasian principle that power is its own reward; people can have either money or power, but Fantasians avoid giving them both. Members of the House of Long Sentences (the Fantasian Parliament) get expenses payments, but no salary; the Prime Minister gets the least generous expenses.

Teachers' pay is worked out according to their teaching ability (pupils vote), their pupils' test results and the level at which they teach. On average, primary school teachers get double the pay of secondary school teachers, who in turn are wealthy by comparison with university teachers.

Housewives or househusbands receive a basic salary from the state, plus an extra 16,500 Fantasian Grotniks (about \$4,500 US) annually for each small child in the family.

People who do dirty, strenuous, dull or distasteful work (e.g. rubbish collectors, coal miners, factory workers or sewage workers) are at the top of the Fantasian wages scale. Other highly-paid workers include gardeners (Fantasians like looking at flowers), hospital nurses and librarians. Among the poorest-paid workers are advertising agents, TV weather forecasters, traffic wardens and bank managers. Pop singers, who are all employed by the state, are paid starvation wages and allowed to give one concert a year (Fantasians don't like listening to loud noises).

The best-paid people in Fantasia are writers. Guess what I do for a living.

1. Give the Ukrainian equivalents to the words and word combinations:

To pay, value to society, to reward, to reduce, to pay compensation, a wage, to get a reasonable wage, to earn, to get expenses payments, salary, to get the pay, to receive a basic salary, at the top of the wages scale, highly-paid workers, the poorest-paid workers, the best-paid workers, employed by the state, starvation wages.

2. Answer the questions:

1. What is the basic principle of payment in Fantasia?
2. How are doctors/soldiers/officers/MPs/teachers/housewives//others paid in Fantasia?
3. Draw the parallels with Ukraine. What do you consider fair?

3. Match the term with the definition

Terms:	Definitions:
1. compensation package	A. Financial incentives allowing employees to buy company shares at a reduced price

2. performance bonus	B. The full range of salary, bonuses, and benefits offered to an employee
3. stock options	C. The ability of a company to keep employees for a long time
4. remote-work allowance	D. Additional payment for achieving specific targets or goals
5. job retention	E. A comparison of industry salaries for similar positions
6. salary benchmark	F. Money provided to support employees working from home

4. Part A: Fill in the blanks with the correct words

Use: *promotion, overtime pay, job satisfaction, annual raise, flexible schedule, health insurance*

- Many IT companies offer a _____ to support employees' work-life balance.
- Receiving an _____ motivates employees to stay with the company.
- A _____ may be offered when employees work beyond standard hours.
- Good benefits, a positive environment, and interesting tasks increase _____.
- A key benefit in many tech firms is high-quality _____.
- Career development opportunities often include the chance for a _____.

Part B: Complete the sentences with the correct form of the word in brackets.

- Competitive salaries help with employee _____ (retain).
- Software developers often expect _____ (compensate) that includes bonuses.
- A good workplace culture increases _____ (motivate).
- Companies offer additional benefits as a form of _____ (reward).

5. Choose the correct option:

- A *performance-based bonus* is usually connected to:
 - years of work
 - meeting company goals
 - number of vacation days
- In IT companies, *non-monetary benefits* often include:
 - flexible working hours
 - higher taxes
 - office dress codes
- A *high salary benchmark* means:
 - the industry pays well
 - salaries are secret
 - employees work fewer hours
- Remote-work benefits* became more important because:
 - fewer people use technology

- b) companies want employees to relocate
- c) many IT jobs can be done from home

6. Speak on one of the topics:

- **What salary and benefits are most important for IT professionals today?**
Consider elements like remote work, health packages, training budgets, mentorship, equipment support.
- **Do job rewards such as bonuses and stock options increase motivation in IT teams? Why or why not?**
Discuss long-term vs short-term motivation, fairness, transparency, or potential stress.
- **Should IT companies offer equal salaries globally for the same job, or adjust pay based on country?**
Debate fairness, cost of living, global competition, and remote work trends.

Test questions:

1. What are basic principles of payment in our country?
2. What benefits are the most important in IT companies?
- 3.

Lesson 11

Мета: Сприяти формуванню професійно орієнтованої іншомовної компетентності студентів шляхом опрацювання автентичного тексту англійською мовою на тему «HR department»; розширити термінологічний словник у job hunting field; розвинути здатність працювати з різними джерелами, розшукувати, обробляти, аналізувати і синтезувати отриману інформацію.

Read the text: JOB HUNTING

Getting a job is a problem which every person earlier or later faces. We spend great part of our life at our job, so choosing a right career is one of the most important decisions you will make in your life. To find a good job when you are young and do not have working experience is rather difficult and it is one of the most stressful situations. The job search may take a while, but with the simple steps you will find that job that suits you. There are many ways to get your first job. The first place where you can ask for a job is the organization where you are undergoing practical training. Another thing you can always do is to make a list of organizations which need your kind of skills and just send them a copy of your CV. You can also go to a personnel or employment agencies. Many employment agencies deal with employers and handle temporary and permanent jobs, that is why they have more information on possible vacancies and they list jobs. One of the few places to find a job is the Internet also known as the world wide web. Go on the world wide web and type in wanted jobs in any major search engine, or the specific job that you are looking for, and you will come up with many results. Then you should check the newspapers where the employers advertize for job vacancies. You may examine their advertisements and if you are interested in one, you are to replay to it applying for a job. You can use newspapers and Internet in order to put your advertising called mini resume. Usually this mini resume is published online on employer's websites or it is advertized in the newspapers. It includes a reference to the complete resume. Composing your mini resume try to write only necessary information, tell about your education, experience, additional knowledge and skills in a few words. One of crucial steps to getting a job is actually to talk to any trustworthy person you are friends or acquaintances with. You may ask your friends and relatives for help as up to fifty per cent of job vacancies never get advertised in the newspapers. As weird as this may sound employers generally hire people they know, first and people sent to them from people they know, second. This is of course assuming both applicants have the same amount experience. In fact it has been suggested as many as five of every ten positions are filled through personal contacts. The better the job and the better the pay, the greater the chance it will be offered through a personal contact. Also, keep in mind that if you know of a friend who works in a field, that you are interested in, talks to him. He can usually help you out in your search, and possibly get you a job, or a career that you will love and enjoy. However personal contacts do not guarantee a job. Remember to try to choose a job that you will enjoy. When you find an interesting vacancy, you are to prepare your resume and to send your CV and covering letter to the employer.

1. Give Ukrainian equivalents to the words and word combinations:

a post, a position, to apply for a job, to appoint, an applicant, application, to attend an interview, experienced, to have experience in one's field, to hire, to employ, an employer, an employee, to seek a position, to look for a job, work background, to dismiss, competitive, responsibility, obligation, skillful, reference, experimental period

2. Answer the questions:

1. Why is choosing the right career considered one of the most important decisions in life?
2. Why is it difficult for young people without work experience to find a job easily?
3. What are some places where a person can look for their first job?
4. How can the Internet help in finding a job?
5. What information should be included in a mini-resume?
6. Why are personal contacts considered one of the most effective ways to get a job?

Match the words with their meanings

Words	Meanings:
1. vacancy	a. a job that is available
2. CV	b. a company or person who hires workers
3. employer	c. someone you know but not very well
4. acquaintance	d. to announce or promote something publicly
5. advertize	e. a document describing your experience and skills
6. personnel agency	f. an organization that helps people find jobs

3. Analyse job advertisements from a newspaper/site. Devise a structure of a job advertisement. Make a list of useful vocabulary.**Job Advertisements**

The situation of job finding makes people consider job offers in mass media. Today jobs are being advertised through radio broadcasts, television, newspapers and magazines. In small business, as a rule, they prepare their own copies and give them to different newspapers. They may also prepare form letters or circular-letters and distribute them by themselves. Big business uses various advertising mass media means to attract many candidates for a vacancy and to choose the best to be employed.

Reading newspapers and magazines one has a chance to choose the position to apply for. A job advertisement in most cases is supposed to include a description of the job, the company, the requirements, the location, the salary, benefits, and the promotion prospects.

The language of advertisement is a specific one, so is the language of job advertisements. The typical phrases used in them are:

- ◆ the start you need ...
- ◆ here is your chance
- ◆ aged between ... and ...
- ◆ we expect you to be ...
- ◆ show a capacity for ...
- ◆ you will need (energy, a good presence, experience in the field of, etc.)
- ◆ this job calls for ...
- ◆ you will be responsible for ...
- ◆ it will include preparing ...
- ◆ 5+years previous experience in ...
- ◆ English (Computer, Book-keeping, etc.) essential
- ◆ net monthly salary ...
- ◆ competitive salary around ...

- ♦ wide range of benefits
- ♦ relocation expenses
- ♦ free life and medical insurance
- ♦ open to men and women
- ♦ only men (women)
- ♦ please send your CV now: by email.....

Job advertisements may be different. Some of them are long giving details about the company itself, considering a job offer in details, describing the potential abilities, capacity for business and human qualities of a person needed. Some other job advertisements may be brief, businesslike and informative. Local newspapers usually contain several pages of advertisements. They are grouped in various categories. In the category of job advertisements there may be one sentence making a job advert.

4. Imagine you are a personnel manager. There is a vacancy in your IT company. Think of a position, tasks, requirements, benefits, promises and write a job advertisement to a newspaper to find an employee.

5. Find the synonyms in the text to the following words:

1. to obey, _____
2. aim, _____
3. famous, _____
4. study, _____
5. to demand, _____
6. to obtain, _____
7. to take part, _____
8. to expect, _____
9. to permit. _____

6. Speak on one of the topics:

- Find a job ad you are interested in and talk about the position, tasks and responsibilities, requirements, benefits and promises.
- Analyse several job ads from the area of activity you are interested in and make an employee profile: personal/professional/educational requirements, tasks expected to be performed, benefits provided.

Test questions:

1. How adverts help find a job?
2. What problems does each person face trying to find a job of a dream?

Lesson 12

Мета: Сприяти формуванню у студентів умінь читати, розуміти та аналізувати професійні тексти англійською мовою на тему «Job Interview.»; розширити їх термінологічний словник; розвинути навички усної та письмової комунікації англійською у професійному середовищі.

Read the text: Job Interview

Job interviews can be nerve-wracking, but the key to standing out is preparation. Knowing what to expect and how to respond makes all the difference in reducing interview stress. Job seekers across the world, whether fresh graduates or experienced professionals, can benefit from job interview preparation.

Ready to nail your next interview? We've got you covered with 15 of the most common job interview questions and example answers to get you started. We'll also share the reasons why interviewers ask these questions so you can keep these in mind as you craft your responses.

Knowing what kind of questions to expect, and having your answers ready, can make all the difference when it comes to interview confidence. Here's why:

- Reduce anxiety: Preparation gives you confidence. By familiarizing yourself with potential questions, you'll have ready-made answers that prevent stumbling under pressure.
- Make a strong impression: Clear, thoughtful responses demonstrate professionalism and communication skills.
- Showcase relevance: Well-prepared answers allow you to connect your experiences with the job's requirements.
- Improve performance: With practice, you'll refine your delivery, keeping answers concise and impactful.

Preparation builds confidence, and confidence leads to results. For job seekers, these tailored tips will ensure you're interview-ready.

Top 15 common job interview questions and sample answers

1. *Tell me about yourself.* This classic opener often leaves people unsure of where to begin. Keep it structured and relevant: Summarize your background.; Highlight professional achievements tied to the role.; End with short-term objectives.

A. Example answer: _____

2. *What do you know about our business?* This is where research shines! Navigate their website, news mentions or LinkedIn.

B. Example answer: _____

3. *What interests you about this position?* Tie your passion with their needs. Talk about the role and the business.

C. Example answer: _____

4. *How is your previous experience relevant?* Be specific. Mention how past roles align with key skills from the job description.

D. Example answer: _____

5. *Why did you leave your previous role?* Focus on professional growth. There's no need to trash-talk your past job if it didn't go well. People move on or want to find a better fit for themselves all the time. Focus on what you want next.

E. Example answer: _____

6. *What are your strengths?* Use strengths tied to their job requirements. Yes, you might be a brilliant data analyst or a hockey champ, but if that doesn't apply to the role then maybe leave that out.

F. Example answer: _____

7. *What are your weaknesses?* Turn a potential weakness into a strength by showing growth. It's about showing that you're aware of your growth areas and actively working on them.

G. Example answer: _____

8. *What's your preferred work or management style?* Match your style to the job's work culture. Finding the right work culture is essential to your success in the role and your wellbeing. A big salary might be tempting, but if the role doesn't suit your work style, it can be hard to thrive. The best job is one that suits how you like to work so you can focus on getting the good work done.

H. Example answer: _____

9. *What are your salary expectations?* Research is vital. Provide ranges politely and flexibly.

I. Example answer: _____

10. *Can you give examples of leadership?* Even non-managerial roles can demonstrate leadership moments. Think about times that you've volunteered, taken initiative, led a project or stepped in while the manager was away.

J. Example answer: _____

11. *How do you handle stress?* Showcase productive strategies, unfortunately crying in the bathroom may not be the best one to share. Think about how you might break down tasks, meditate when you get home or prioritize requests.

K. Example answer: _____

12. *How would you handle workplace conflict?* Stay solution-driven and avoid turning the interview into a therapy session.

L. Example answer: _____

13. *Where do you see yourself in five years?* Tie it to progression and their company's vision. They know you might not be planning to stay around forever, but they want to know that you're heading in the same direction.

M. Example answer: _____

14. *Tell us about a challenge you overcame.* Use the STAR method (Situation, Task, Action, Result).

N. Example answer: _____

15. *Do you have any questions for us?* Ask insightful questions about growth and responsibilities. You can also throw in a few fun ones like asking how the team connects socially or whether pets visit the office.

O. Example answer: _____

1. Read the text and match the questions and answers:

A 1. "I've done my research and learned that your company is one of Canada's most innovative financial tech firms, recently featured in The Globe and Mail for its seamless integration services. Your commitment to customer-first strategies aligns perfectly with my values, and I'd love to contribute to such forward-thinking initiatives."

2. "As a retail manager, I developed customer training strategies that increased our Toronto branch's sales by 20%. Your emphasis on customer retention reminds me of that achievement, and I'm excited to apply similar strategies here."

3. "My name's Emma, and I have five years of experience in marketing, specializing in social media strategy and content creation. I've worked with Canadian startups to create campaigns that increased engagement by 30%, and I'm eager to bring this expertise to your team. My goal this year is to introduce innovative strategies that align with your company's focus on creativity and user engagement."

4. "The role resonates with me because it combines my data analytical skills with customer-driven insights. I admire your focus on community-driven sustainability projects, and I'm eager to contribute my green innovation experience towards making an impact here."

5. "My greatest strength is my adaptability. Leading remote projects taught me how to pivot strategies quickly, ensuring productivity no matter the circumstances."

6. "I enjoyed my time at XYZ Company, but after four years, I wanted a fresh challenge to further my leadership skills. This opportunity offers more responsibilities within a company that aligns with my progressive outlook."

7. "I thrive in collaborative environments where diverse perspectives are valued but also appreciate clear guidance for objectives. This balance ensures team synergy without ambiguity."
8. "In the past, I found it hard to delegate tasks, preferring to handle everything myself. However, I've focused on improving this by mentoring team members and trusting their capabilities, which has resulted in smoother workflows."
9. "I proposed a mentoring initiative at my last job to support junior staff, fostering growth while increasing team retention. Leading by example is core to who I am."
10. "Based on my research and the responsibilities outlined, I believe a range of \$80,000–\$90,000 aligns with industry standards. I'm open to discussing this as part of the full benefits package."
11. "In my prior role, I faced a logistics delay impacting product delivery (Situation). I was tasked with finding a resolution to minimize risk (Task). I networked with backup vendors and adjusted shipment priorities (Action). Ultimately, we met 95% of deadlines, maintaining client trust (Result)."
12. "When faced with tight deadlines, I prioritize tasks while remaining communicative with the team. Breaks for clear thinking also help me minimize burnout."
13. "What training opportunities does the company support?" "How does this role contribute to long-term company goals?"
14. "In five years, I see myself becoming a team lead, driving innovative solutions and mentoring others while helping the company achieve its strategic growth goals."
15. "I believe conflict often arises from miscommunication. When disputes occur, I ensure both parties feel heard and focus on collaborative solutions that align with our goals."

2. Give Ukrainian equivalents of the following words and word combinations:

benefit from, keep in mind, reduce anxiety, relevance, concise, ensure, background, objectives, essential, vital, insightful question,

3. Answer the questions:

1. Why is preparation essential for performing well in a job interview, especially in the IT industry?
2. Which interview questions do you think are the most challenging for IT candidates, and why?
3. How can an IT specialist connect their technical background to behavioural interview questions like "Tell me about yourself"?
4. Why do employers ask about strengths and weaknesses, and how can IT professionals answer these effectively?
5. What strategies can IT candidates use to explain technical experience to non-technical interviewers?
6. How can researching a company before an interview help improve your performance?
7. What types of leadership examples can IT students use during an interview if they have never managed a team?

8. How can IT professionals communicate their long-term career goals without sounding unrealistic or too ambitious?

4. Match the Terms with Their Definitions

Terms:

1. Transferable skills
2. Behavioural question
3. Salary expectations
4. Job relevance
5. Professional growth
6. Work style

Definitions:

- A. The way someone prefers to organise tasks and communicate at work
- B. Abilities that can apply across different jobs or industries
- C. The suitability of your experience for a specific job
- D. Career development through learning or gaining experience
- E. Interview question that focuses on past actions or behaviour
- F. The compensation a candidate believes is appropriate for a role

5. Complete the sentences with the correct words:

qualifications, achievements, conflict, responsibilities, pressure, strengths

1. Interviewers want to see how well your _____ match the job requirements.
2. Sharing specific professional _____ helps you stand out from other candidates.
3. When asked about your _____, choose those relevant to the position.
4. Candidates should explain how they deal with _____ in a calm and productive way.
5. It's important to show that you can handle tasks and _____ independently.
6. A common interview question asks how you resolve workplace _____.

6. Speak on one of the topics:

- **Technical vs. behavioural interviews in IT**

Discuss which type of interview is more difficult for IT professionals and how to best prepare for each.

- **How to Present Technical Skills to Non-Technical Recruiters**

Explore strategies for explaining projects, technical stacks, or tools in clear, professional language.

- **The Role of Soft Skills in IT Job Interviews**

Debate whether communication, teamwork, and adaptability are becoming just as important as coding skills.

Test questions:

1. Why is preparation essential for performing well in a job interview?
2. What are typical questions at the job interview?

Lesson 13

Мета: Сприяти формуванню у студентів уміння читати, розуміти та аналізувати професійні тексти англійською мовою на тему «CV»; розширити їх термінологічний словник; розвинути навички усної та письмової комунікації англійською у професійному середовищі.

Read the text: Creating a CV

If you are pursuing a career in research or academia, you may need to create a CV for potential employers. A CV allows you to detail your scholarly accomplishments and educational history to show you're qualified for the role. Understanding how to format a CV will help you create a compelling document that leaves a positive impression on the hiring committee.

What is a CV?

CV stands for curriculum vitae, which is Latin for "course of life." In some countries like India, South Africa and Australia, a CV and resume are interchangeable. However, in the United States and many parts of Europe, a CV is a detailed outline of your academic career and accomplishments. In the United States, you may need a CV to apply for a teaching or research position. If you're applying for a job outside the US that requests a CV, you can send your resume. Posting information from your CV or resume to your profile can provide employers with a full overview of your experience, and they may be more likely to call you in for an interview.

How to write a CV?

Here are seven basic steps for writing a CV:

1. Create a header with contact information

Your header should be at the top of the page and include your name, phone number, and email address so employers can immediately know who you are and how to reach you.

2. Write a professional summary

Your professional summary is a short bio that introduces you to the reader. This section sums up your best qualifications and explains your ideal career path.

3. Detail your education

Since a CV is often used for the academic job search process, it's important to include a section on your educational history. List your education in reverse chronological order, with your most recent degree first. Include both degrees you've earned and those you're pursuing.

4. Provide your work experience

Detail all your practical work experience so your prospective employer can see your career path, including:

- Full-time and part-time employment
- Internships
- Research projects
- Lab work
- Volunteer work
- Field experience

Include the title of your position, the name and location of your employer and employment dates. Below this, list two to three bullet points that explain your job duties.

5. List your relevant skills

List any abilities that apply to the potential job, such as foreign languages or a type of software. Try to include skills that relate to the job description to make yourself a more desirable candidate.

6. Include additional sections

CVs are usually longer than resumes, so you can detail all the achievements relevant to the potential role. Add sections as needed to list all of your accomplishments, including:

- Publications
- Presentation and lectures

- Community service
- Grants, fellowships or scholarships
- Awards and honors
- Professional memberships
- Consulting work
- Fieldwork
- Study abroad experience
- Conferences

Related: Listing Accomplishments on Your Resume (With Examples)

7. Describe your personal interests (optional)

You can choose to include a brief description of your hobbies and interests. Including a few hobbies may help you form a personal connection with the hiring manager.

1. Give Ukrainian equivalents of the following words and word combinations:

Pursue, employer, curriculum vitae, request, full overview, header, reverse chronological order, internship, bullet points, relevant skills, achievements, accomplishments, fieldwork

2. Answer the questions:

1. What is the main purpose of a CV in academic or research-related careers?
2. How is a CV different from a résumé in the United States and Europe?
3. What kind of positions typically require a CV instead of a résumé?
4. What information should be included in the header of a CV?
5. What is the purpose of the professional summary section?
6. Why is listing education in reverse chronological order recommended?
7. Which types of work experience are appropriate to include in a CV for research or academic positions?
8. Why might additional sections such as publications or conferences be important in a CV?

3. Here is a basic template you can follow when creating your CV. Study it. Write your CV.

CV template

Your Name

[Address, phone number, email address]

Professional summary

[Introduce yourself, highlight your best qualifications and explain why you're a fit for the job]

Education

[Title of degree] [GPA] [Dates attended]

[School name]

[Title of dissertation or thesis]

Work experience

[Job title] [Dates of employment] [Name of employer] [City and state of employer] [description of your responsibilities and accomplishments]

Skills

[relevant skills]

Personal interests

[Short paragraph on your personal pursuits]

Community service

[Position held or job performed] [Dates of service]

[Organization] [City and state of organization][Accomplishment]

Publications

[Authors with your name in bold] [Year of publication] [Title of article] [Publishing journal]

Awards and honors

[Name of award] [year]

4. Match the Terms with Definitions

Terms:	Definitions:
1. Fellowship	A. A short introduction that highlights your main qualifications
2. Internship	B. Academic or professional articles you have written
3. Professional summary	C. Work done without pay to contribute to a cause or community
4. Volunteering	D. A scholarship or financial support for academic research
5. Publications	E. A temporary work placement that provides practical experience
6. Consulting work	F. Providing expert advice to organizations

5. Part A: Fill in the Gaps with the correct words:

accomplishments, education, qualifications, experience, outline, research

1. A CV provides a detailed _____ of your academic and professional background.
2. You should list your _____ in reverse chronological order.
3. Work _____ such as lab work and internships should be included.
4. A strong CV highlights your most important _____.
5. Your professional summary should briefly describe your main _____.
6. Many academic CVs include sections on publications and _____ projects.

Part B: Complete the words using the correct form (verb → noun):

1. The university will **evaluate** your CV before the interview. → The _____ will take time.
2. He has **achieved** several awards. → His biggest _____ is a research grant.
3. They want to **publish** their findings. → The _____ will appear next month.
4. She will **present** her project at the conference. → Her _____ is scheduled at 2 p.m.

5. Choose the Correct Option

1. A CV usually contains:
 - a) only one page
 - b) detailed academic and research history
 - c) only job duties
2. A professional summary should:
 - a) be long and detailed
 - b) include personal stories
 - c) briefly introduce your strengths
3. Publications and conference presentations are important for:
 - a) academic positions
 - b) customer service jobs
 - c) sports competitions

4. In a CV, skills should be:
- a) relevant to the job
 - b) listed randomly
 - c) unrelated to the job

7. Speak on one of the topics:

- **Should IT students create both a résumé and a CV?**

Discuss whether academic CVs are useful for those who plan to work in research, industry, or both.

- **How important are publications, conference participation, and research projects for careers in IT?**

Consider fields such as AI, cybersecurity, software engineering, and data science.

- **What skills should be highlighted on a CV for someone applying to a machine learning or software engineering research position?**

Debate which technical and soft skills matter most.

Test questions:

- | | |
|----|--------------------------------------|
| 1. | What is a CV? |
| 2. | How is a CV different from a résumé? |

Lesson 14

Мета: Сприяти формуванню у студентів уміння читати, розуміти та аналізувати професійні тексти англійською мовою на тему «Professional networking groups»; розширити їх термінологічний словник; розвинути навички усної та письмової комунікації англійською у професійному середовищі.

Read the text: Professional Networking Groups

Networking is one of the most effective tools for building your career, and it's never too early to start. For university students, networking can open doors to internships, graduate jobs, and valuable career advice. These networking tips for students will help you build meaningful professional connections while still studying, setting you up for success after graduation.

Before diving into specific networking strategies for university students, it's important to understand why building professional connections during your studies is crucial. Early networking helps you gain industry insights, discover hidden job opportunities, and develop professional relationships that can support your career journey. The connections you make during university often become the foundation of your professional network.

Five reasons networking is crucial:

№ 1. Find mentors

Network in the right places and the chances are that you'll meet a lot of experienced professionals and experts in your sector. If you're at the beginning of your career, getting tips and insights from those who've been there and done it all before can be priceless.

If you have a great chat with someone at, for example, an event, don't be afraid to ask to exchange contact details or to connect on LinkedIn and to ask if you can follow up with them later.

№ 2. Hear about opportunities that aren't public yet

Many jobs aren't advertised. So, if you want to be in with a chance of getting that sought after internal promotion, or moving to a more interesting or challenging role with a new company, you'll need to network to find out about them. The fact is that people recommend people they know and that they like. So, even if you're not networking directly with a group directly responsible for hiring, there's still a good chance that someone in your network will have the opportunity to make a recommendation.

№ 3. Develop Strong Communication Skills

Perhaps you've seen a job advertised that looks perfect for you, but you don't know much about the company. Or you've heard there may be an opportunity opening up, but you've also heard that the company culture might not be all that great.

You could just hope for the best, or you could reach out to your network to see if anyone can give you an insider's view. A quick cup of coffee with someone who knows what life is really like at the company you're considering can be invaluable.

№ 4. Learn more about your industry, its future, and its challenges

While you shouldn't limit your networking to a single industry, the chances are that most of the people you meet with will work in the same sector as you. This means it can be a great opportunity to learn about the latest moves in your industry and stay abreast of major developments.

№ 5. Learn about new trends and best practices

Networking can be a great source of fresh ideas, new perspectives, and ideas to help you in your day-to-day job.

This sort of networking is easy online. Join relevant LinkedIn groups or look out for specialist professional forums (often hosted by professional bodies) where you can ask and answer work-related questions.

Embrace the possibilities

When it's done properly, professional networking can open all sorts of doors. The key is reciprocation: if you're open to helping others, then there's a strong chance they'll help you right back. Applying these student networking tips will give you a competitive edge when seeking internships and job opportunities. provide a foundation for building meaningful professional relationships. Remember that effective networking is about creating genuine connections and providing value to others. Start implementing these strategies early in your university career, and you'll graduate with not just a degree, but a strong professional network to support your career journey.

1. Give Ukrainian equivalents of the following words and word combinations:

Internship, crucial, foundation, insight, promotion, invaluable, properly, reciprocation, implement, graduate

2. Answer the questions:

1. Why is networking considered an essential tool for career development, especially for university students?
2. How can mentors found through networking benefit a student at the beginning of their career?
3. What is meant by "hidden job opportunities," and why are they often accessed through networking?
4. In what ways can networking help students learn about company culture before applying for a job?
5. Why is communication an important skill when building a professional network?
6. How can networking help students stay updated on industry trends and challenges?
7. What role does online networking (e.g., LinkedIn, forums) play in modern career development?
8. Why is reciprocation important in networking, and how can students provide value to others?

3. Match the Terms to Their Definitions

Terms:	Definitions:
1. Mentor	A. A career advancement opportunity within the same company
2. Internal promotion	B. A suggestion or endorsement given by someone who knows you
3. Professional network	C. Someone who gives guidance based on experience
4. Industry trends	D. A group of professional contacts who support each other
5. Best practices	E. Commonly accepted methods that produce good results
6. Recommendation	F. Developments or patterns shaping a particular sector

4. Part A: Fill in the Gaps with the correct word:

insights, opportunities, communication, connections, trends, exchange

1. Networking helps students build professional _____ that may support their future careers.
2. Many job _____ are not advertised publicly.
3. Students can learn valuable industry _____ by talking to experienced professionals.
4. Good _____ skills are essential for meaningful networking.
5. Professionals often _____ contact details after meeting at events.
6. Attending conferences helps students stay informed about new industry _____.

Part B: Complete the sentences using the correct form of the word in brackets:

1. Networking helps students improve their **(communicate)** _____ skills.
2. A mentor can provide **(guide)** _____ and support.
3. Many companies value employees who show **(curious)** _____ about industry developments.
4. Students who network early often have better **(prepare)** _____ for job searching.

5. Choose the correct option:

1. Networking is most effective when it is based on:
 - a) competition
 - b) genuine relationships
 - c) random conversations
2. Hidden job opportunities are often discovered through:
 - a) online shopping
 - b) rumors
 - c) professional contacts
3. Learning about a company's culture before applying helps students:
 - a) make more informed decisions
 - b) avoid networking
 - c) skip interviews
4. Students can easily participate in networking by:
 - a) joining relevant LinkedIn groups
 - b) avoiding social events
 - c) ignoring professionals in their field

6. Speak on one of the topics:

1. How important is networking for building a career in IT, especially in fields like AI, cybersecurity, or software engineering?

Consider how contacts can provide insights, job leads, or collaborative opportunities.

2. What role does online networking (LinkedIn, GitHub, tech forums) play compared to traditional face-to-face networking?

Discuss advantages, disadvantages, and best practices for IT professionals.

3. How can IT students provide value when networking with experienced professionals?

Discuss ways such as sharing emerging tech knowledge, collaborating on projects, or contributing to open-source communities.

Test questions:

1. Why are professional networking groups important for future career?
2. What is meant by “hidden job opportunities”?

Lesson 15

Мета: Сприяти формуванню у студентів уміння читати, розуміти та аналізувати професійні тексти англійською мовою на тему «Critical thinking»; здатність працювати з різними джерелами, розшукувати, обробляти, аналізувати і синтезувати отриману інформацію, розвинути навички усної та письмової комунікації англійською у професійному середовищі.

Read the text: Critical thinking

Critical thinking is an essential skill that enables students to approach challenges with clarity and insight. It involves questioning assumptions, evaluating evidence, and making well-informed decisions. Rather than simply absorbing information, critical thinking encourages a deeper understanding and the ability to apply knowledge effectively.

This article delves into the importance of critical thinking for students, its role in academic and personal growth, and practical approaches to developing this skill. Whether navigating schoolwork or preparing for future careers, honing critical thinking equips students for success in all areas of life.

Critical thinking is a skill that enables students to analyse information, solve problems, and make informed decisions. At its core, critical thinking is the ability to think rationally, evaluate evidence, and form reasoned judgments. Far beyond memorisation or rote learning, critical thinking involves questioning, exploring, and understanding different perspectives.

For students, this capability becomes a foundation for success in both academic and everyday life. Whether you're debating a current issue in class or deciding how to manage your time, applying critical thinking ensures thoughtful and effective solutions. But what exactly does this skill entail, and how can it be nurtured? Before we explore its role and benefits, let's break it down further.

Critical thinking means asking questions like "Why?" "How?" and "What if?" It also involves identifying assumptions, avoiding bias, and relying on solid evidence. These practices help students not just learn, but comprehend on a deeper level.

While critical thinking and communication may seem distinct, they intersect when it comes to critically evaluating what others say and responding thoughtfully. Communication becomes a tool for expressing curiosity, asking questions, and engaging in meaningful dialogue.

Critical thinking sharpens decision-making by encouraging students to analyse information and question assumptions. For example, in a group project, critical thinking helps students evaluate ideas, while communication allows them to ask clarifying questions and share insights.

- **Listening Actively:** Active listening is essential for critical thinking. By paying close attention to what others say, you can assess the validity of their arguments and respond with curiosity or counterpoints.
- **Asking Thoughtful Questions:** Critical thinking thrives on curiosity. Communicating your questions or doubts helps deepen understanding and fosters richer discussions.
- **Collaborating Effectively:** Collaboration combines diverse perspectives, and communication ensures these ideas are shared and refined.

For instance, a university student preparing a research report might critically evaluate sources and then communicate their findings clearly to persuade their audience. In this way, communication transforms critical thinking into actionable insights, bridging the gap between analysis and interaction.

Critical thinking is not just a buzzword; it is an essential skill that prepares students for success far beyond the classroom. Here's why.

One of the greatest advantages of critical thinking is how it impacts a student's academic performance. Education is no longer simply about absorbing facts; it's about interpreting them, applying them, and forecasting outcomes. When working through complex assignments or reviewing academic material, critical thinking ensures that students challenge assumptions rather than accept them at face value.

For instance, during a literature analysis, a student applying critical thinking doesn't just take a character's actions as given. Instead, they consider the context, motivations, and implications, giving their interpretations more depth.

Life is a series of decisions, and students face these daily. By developing critical thinking skills, they enhance their ability to evaluate options and arrive at well-reasoned solutions. Whether it is deciding which extracurricular activities to take on or solving real-world problems, students with critical thinking abilities make better decisions.

For example, budgeting during university often requires weighing priorities. Should a student spend money on a textbook upfront or borrow it from the library to save for groceries? Strong critical thinking skills provide the tools necessary to assess options based on consequences.

The importance of critical thinking for students extends well into their future careers. Almost every professional field welcomes individuals who can think on their feet, resolve conflicts, and adapt quickly. Whether working in law, healthcare, or engineering, critical thinking prepares students to become valuable team members and leaders.

Imagine a role like data analysis; here, critical thinkers don't just report figures, but ask futuristic questions like, "What patterns are emerging?" or "What recommendations will this analysis lead to?"

There are countless advantages of critical thinking that directly support daily academic and personal life. These include:

1. **Better Decision-Making:** From selecting courses to forming opinions on societal issues, students with strong reasoning make better decisions.
2. **Improvement in Research Skills:** Critical thinking sharpens your ability to assess sources, weed out unreliable information, and create logical analyses.
3. **Enhanced Creativity:** Thinking critically isn't only about logic; it also opens avenues to innovative ideas by encouraging perspective-based exploration.
4. **Stronger Self-Awareness:** Critical thinking allows students to identify their beliefs and challenge long-held assumptions. This leads to personal growth and better emotional intelligence.
5. **Improved Communication:** Critical thinkers express themselves more articulately because they base ideas on sound reasoning, not guesses.

On the whole, critical thinking means smarter learning today and a more rewarding professional life tomorrow.

2. Give Ukrainian equivalents of the following words and word combinations:

Approach, challenges, assumptions, apply knowledge, delve into, core, assumption, avoid bias, solid evidence, intersect, meaningful dialogue, sharpen, doubt, evaluate sources, impact, complex assignment, implication, extracurricular activity, consequences.

3. Answer the questions:

1. How is critical thinking defined in the text?
2. Why is critical thinking considered more valuable than memorisation or rote learning?
3. What types of questions does critical thinking encourage students to ask?
4. How do critical thinking and communication support each other?
5. What role does active listening play in developing critical thinking?
6. How does critical thinking help students make better decisions in daily life?
7. Why is critical thinking essential for future professional careers, especially in technical fields?
8. What are at least three advantages of critical thinking mentioned in the text?

3. Match the terms with their definitions

Terms:	Definitions:
1. evaluate	A. A point of view or way of seeing something
2. assumption	B. Information or facts used to support a conclusion
3. bias	C. Preference or prejudice that influences judgment
4. evidence	D. To assess or judge the value of something
5. reasoning	E. A belief taken for granted without proof
6. perspective	F. Logical thinking used to form conclusions

• Part A: Fill in the gaps with the correct word:

analyse, communicate, assumptions, decision-making, evidence, comprehension

1. Critical thinking allows students to _____ information more effectively.
2. Good critical thinkers question their own _____.
3. Strong _____ skills help students justify their conclusions.
4. Gathering reliable _____ is essential for forming accurate judgments.
5. Critical thinking improves everyday _____.
6. Deep learning requires more than memorizing facts; it requires real _____.

Part B: Complete the sentences with the correct form of the word in brackets.

1. Critical thinking increases a student's _____ of complex ideas. (understand)
2. Effective teamwork depends on clear _____. (communicate)
3. Asking questions shows intellectual _____. (curious)
4. Strong analytical skills support logical _____. (conclude)

5. Choose the correct option

1. Critical thinking helps students:
 - a) repeat information exactly
 - b) question information and evaluate it
 - c) memorise long definitions
2. A bias is:
 - a) a neutral fact
 - b) an emotional response
 - c) an unfair preference that influences judgment
3. Communication supports critical thinking because:
 - a) it replaces analysis
 - b) it helps express ideas and ask questions
 - c) it prevents discussion
4. In academic research, critical thinking helps students:
 - a) use sources randomly
 - b) evaluate sources and avoid unreliable information
 - c) only use personal opinions

6. Speak on one of the topics:

- **How important is critical thinking for professionals in IT fields such as cybersecurity, data analysis, software engineering, and AI development?**
Consider ethical issues, debugging, data interpretation, and risk assessment.
- **Can AI tools strengthen or weaken students' critical thinking skills?**
Discuss benefits (information access, automation) and risks (overreliance, reduced problem-solving).
- **Should critical thinking be taught as a separate subject in IT programs, or should it be integrated into all technical courses?**
Evaluate effectiveness, workload, and real-world application.

Test questions:

1. What is critical thinking?
2. What are at least three advantages of critical thinking?

Keys:

Lesson 1 What is Science?

Ex 2 1. **science** → h) knowledge which can be made into a system

1. **field of science** → l) a branch of knowledge or area of activity
2. **faculty and staff** → j) all of teachers and other professionals
3. **research** → i) serious and detailed study of a subject
4. **scientist** → k) a person who works in science
5. **degree** → c) a title given by a university to a student who has completed a course of study
6. **to focus on** → d) to direct one's attention to smth.
7. **skill(s)** → e) special ability to do smth. well
8. **to be involved in** → g) to take part, to participate
9. **aspiration** → b) a strong desire to do smth. or have smth.
10. **curiosity** → a) the desire to know or learn
11. **aspect** → f) a particular side of many-sided idea

Lesson 2 The Importance of Science

Ex 4 **product (produce) / productive / producer(s) / productivity**

1. We had a very **productive** meeting last week.
2. The two lasers combine **to produce** a powerful cutting tool.
3. The country's main **product** is oil.
4. New **production** methods have led to increased **productivity**.
5. This country is one of the world's leading oil **producers**.
6. The wine bottle was marked «**Product of France**».

(to) **predict / prediction / predictable**

7. The economists **predicted** an increase in the rate of inflation.
8. You're so **predictable**!
9. It is hard **to predict** when it will happen.
10. His **prediction** turned out to be correct.

science / scientific / scientist

11. I'm fond of reading **science** fiction.
12. He is a famous **scientist**.
13. I don't need any **scientific** proof.

to apply / applied / application(s)

14. This rule does not **apply** in your particular case.

15. A new discovery has a number of industrial **applications**.

16. Her research is both theoretical and **applied**.

(to) require / requirement(s) / required

17. To carry out this plan would **require** increasing our staff by 20%.

18. This monograph is **required** reading for our course.

19. Candidates who fail to meet these **requirements** will not be admitted to the university.

curious / curiosity

20. There was an intense **curiosity** about their plans.

21. I'm **curious** about what happened.

(to) imagine / imagination / imaginative

22. You can't **imagine** how surprised I was.

23. She has a vivid **imagination**.

24. Be **imaginative**!

(to) develop / development

25. This was an important stage in the country's **development**.

26. I'd like **to develop** my idea.

Lesson 3 Computer Scientists Who Changed Our World

Ex 3 1-D, 2-C, 3-B, 4-F, 5-A, 6-E

ex 4 part A: 1.contribution; 2.browser; 3.devices, 4. Innovation; 5. Computation; 6. logic

Part B 1. foundation

recognized

useful / widely used

creative

ex 5 1-b, 2-b, 3-a, 4-b

Lesson 4 Scientific Method

Ex 3 1-C, 2-F, 3-D, 4-E, 5-B, 6-A

Ex 4 Part A analyze, modify, measure, gather, observe, conduct; Part B observation, testable, revision, collection,

Ex 5 1b, 2a, 3c, 4a, 5 All of these are steps of the Scientific Method. 6. F; 7. New ideas or information might make a scientist back up and repeat parts of the Scientific Method, 8. Maybe, 9. F

Lesson 5 Written Report

Ex 2 1. F2. F3.F 4. T 5.F 6. T 7. T.

Ex 4 1. c2.b 3.a 4.c 5.b 6.c 7.a 8. c9. a10.b 11.b 12. c13. a

Lesson 6 Common types of graphs

Ex 3 1–D, 2–E, 3–B, 4–C, 5–F, 6–A,

Ex 5 timeline

categories

icons

correlation

value

trend

Lesson 7 Application of charts in scientific projects

Ex 3 1 – c, 2 – e, 3 – d, 4 – a, 5 – b

Ex 5 1. Has been used; 2. is used; 3. will be created, 4. was designed

Lesson 8 Describing graphs and Charts

Ex 1 Data Visualization in IT Projects

In modern IT projects, **data visualization** plays a vital role in helping teams **analyze** large sets of performance data. Engineers often collect information from servers, networks, or software logs and present it using **graphs** and **charts** to identify patterns or problems quickly.

For example, a **line graph** can **illustrate** the change in network speed over time, while a **bar graph** can compare server response times across different regions. When engineers want to study the **correlation** between two variables—such as memory usage and application speed—they use a **scatter plot**.

A **histogram** helps visualize the **distribution** of response times to see whether the system performs consistently or if there are **outliers** that might indicate errors. Adding clear **labels** and a **legend** ensures that anyone reading the chart can easily understand what the data represents.

By studying these visuals, IT specialists can **arrive at insights** that help them optimize system performance, improve user experience, and make better decisions in future deployments.

Ex 2 1h, 2d, 3b, 4g, 5j, 6i, 7a, 8e, 9c, 10i

Ex 3 1. Fell and then leveled off

hit a peak, 3. Dipped, 4. Plummeted, 5. Rose gradually, 6. remained flat/ stable, 7. Fell gradually; 8 fluctuated, 9. Hit a low, 10. Soared

ex 4 a bottom out, a rocket, a soar, a plummet, a level off.

Ex 6 c

Ex 71. Illustrates/shows; 2. Vary/varied, 3. Was, 4. Rose/ increased/ climbed, 5. Was/is, 6. Was/is, 7. Reached/hit, 8. Rose,/increased/climbed, 9. Fell, dropped

Lesson 9 Mathematical models and optimization techniques

ex 3 simplicity 2. models 3. reliable 4. aspect 5. interpret 6. usability 7. application 8. analyzed 9. determining 10. Challenges

Ex 4 1.e 2.b 3.d 4.a 5.f 6.c

Lesson10 Work and Pay in X-country

ex 3 1-B, 2-D, 3-A, 4-F, 5-C, 6-E;

ex 4 Part A flexible schedule, annual raise, overtime pay, job satisfaction, health insurance, promotion; Part B retention, compensation, motivation, rewarding;

ex 5 1b, 2a, 3a, 4c

Lesson 11 Job hunting

ex 3 1.a 2.e 3.b 4.c 5.d 6. f

Lesson 12 Job Interview

Ex 1Text A3, B1 , C4 , D 2, E6 , F5 , G8 , H.8 , I 10, J9 , K 12, L15, M14 , N 11, O 13,;

ex 4 1-B, 2-E, 3-F, 4-C, 5-D, 6-A;

ex 5 qualifications, achievements, strengths, pressure, responsibilities, conflict

Lesson 13 Creating a CV

ex 4 1-D, 2-E, 3-A, 4-C, 5-B, 6-F

ex 5 Part A: outline, education, experience, accomplishments, qualifications, research;

Part B: evaluation, achievement, publication, presentation

ex 6 1-b, 2-c, 3-a, 4-a

Lesson 14 Professional Networking Groups

ex 3 1-C, 2-A, 3-D, 4-F, 5-E, 6-B;

ex 4 Part A: connections, opportunities, insights, communication, exchange, trends

Part B: communication, guidance, curiosity, preparation;

ex 5: 1-b, 2-c, 3-a, 4-a

Lesson 15 Critical thinking

ex 3 1-D, 2-E, 3-C, 4-B, 5-F, 6-A; ex

4A: analyse, assumptions, communicate, evidence, decision-making, comprehension; 4B: understanding, communication, curiosity, conclusions

Ex5: 1–b, 2–c, 3–b, 4–b

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