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ЭЛЕКТРОННЫЙ УЧЕБНО-МЕТОДИЧЕСКИЙ КОМПЛЕКС ПО УЧЕБНОЙ ДИСЦИПЛИНЕ

«ИНОСТРАННЫЙ ЯЗЫК (АНГЛИЙСКИЙ)»

для студентов специальности
1-54 01 01 Метрология, стандартизация и сертификация
(по направлениям)

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Перечень материалов

Электронный учебно-методический комплекс содержит материалы для теоретического изучения дисциплины, учебные пособия по изучаемой дисциплине, тесты для промежуточного и итогового контроля знаний, учебно-программную документацию, состоящую из учебной программы, учебно-методическую документацию, которая включает методические рекомендации по обучению профессионально ориентированной устной речи, методические рекомендации по переводу научно-технического текста, методические рекомендации по обучению составлению реферата и аннотации специального текста.

Электронный учебно-методический комплекс предназначен для студентов.

Пояснительная записка

Электронный учебно-методический комплекс ЭУМК-ПСФ по дисциплине «Иностранный язык (английский)» представляет совокупность документов, направленных на создание содержательных, методических и организационных условий языковой подготовки студентов.

ЭУМК-ПСФ по дисциплине «Иностранный язык (английский)» сформирован на основе действующей Типовой учебной программы дисциплины «Иностранный (английский) язык» для неязыковых специальностей высших учебных заведений РБ и учитывает:

- требования документов Министерства образования РБ по стандартизации языкового образования;
- социальный заказ на уровень языковой подготовки, выраженный в потребностях и профессиональных намерениях студентов;
- особенности общеобразовательной подготовки студентов по иностранному языку.

Данный ЭУМК разработан для студентов приборостроительного факультета, обучающихся по специальности 1-54 01 01 Метрология, стандартизация и сертификация (по направлениям).

Представленный ЭУМК-ПСФ содержит материалы для теоретического изучения дисциплины, учебные пособия по изучаемой дисциплине, тесты для промежуточного и итогового контроля знаний, учебно-программную документацию, состоящую из учебной программы, учебно-методическую документацию, которая включает методические рекомендации по обучению профессионально ориентированной устной речи, методические рекомендации по переводу научно-технического текста, методические рекомендации по обучению составлению реферата и аннотации специального текста.

Цели ЭУМК:

- формирование у студентов вышеуказанной специальности навыков и развития умений профессионально ориентированного иноязычного общения в устной и письменной форме в предполагаемых ситуациях профессиональной и социокультурной деятельности;
- ознакомление с зарубежным опытом в соответствующей области знания.

Особенности структурирования и подачи учебного материала:

ЭУМК-ПСФ по дисциплине «Иностранный язык (английский)» рассчитан на полтора академических года и предусматривает проведение аудиторных практических занятий в соответствии с учебным планом в объеме 136 часов и внеаудиторную самостоятельную работу студентов в объеме 152 часа. I семестр рассчитан на 34 часа аудиторных практических занятий с интенсивностью 2 часа в неделю и 30 часов внеаудиторной самостоятельной работы. II семестр рассчитан на 50 часов аудиторных практических занятий с интенсивностью 3 часа в неделю и 44 часа внеаудиторной самостоятельной работы. III семестр рассчитан на 52 часа аудиторных практических занятий с интенсивностью 3 часа в неделю и 78 часов внеаудиторной самостоятельной работы. В конце I и II семестров проводится зачет. В конце III семестра студенты сдают итоговый экзамен.

Наряду с экзаменом и промежуточными зачетами проводится текущий контроль в форме устных опросов по пройденной тематике,

переводов текстов по специальности, тестов, которые носят комплексный характер, проверяя уровень сформированности как языковых (лексических и грамматических), так и речевых умений и навыков.

Весь курс обучения английскому языку студентов вышеуказанной специальности строится на основе интеграции теоретической (грамматика), профессионально ориентированной и социокультурной составляющих и направлен на усвоение языкового материала (фонетика, лексика, грамматика), формирование и развитие речевых умений и навыков, а также на углубление и расширение профессионально ориентированных знаний.

Особенностью данного комплекса является структурированная подача учебного материала. Содержание ЭУМК-ПСФ включает в себя следующие разделы: теоретический и практический, контроля знаний, справочные материалы, учебную программу, учебно-методическую карту по дисциплине, включает методические рекомендации по переводу научно-технического текста, методические рекомендации по обучению профессионально ориентированной устной речи.

В теоретическом разделе ЭУМК-ПСФ представлены материалы по грамматике английского языка, соответствующие учебной программе по дисциплине «Иностранный язык (английский)». Практический раздел включает текстовые материалы с заданиями к ним. Раздел контроля знаний содержит тесты для промежуточного и итогового контроля сформированности лексико-грамматических навыков, навыков чтения и перевода. Данный раздел обеспечивает возможность самоконтроля обучающихся, их текущей и итоговой аттестации.

Рекомендации по организации работы с ЭУМК

Разработанный ЭУМК предназначен для студентов очной формы получения высшего образования, а также преподавателей БНТУ кафедры «Английский язык № 1», для проведения как аудиторных практических занятий, так и для организации самостоятельной работы студентов. ЭУМК содержит ссылки, позволяющие оперативно найти необходимый учебный материал.

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5. Наречие: классификация, категория степеней сравнения.
6. Глагол: видо-временная система, действительный и страдательный залог, модальные глаголы и их эквиваленты; согласование времен.
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12. Сложное предложение: сложносочиненное и сложноподчиненное, типы придаточных предложений; бессоюзное подчинение.
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1. Имя существительное: категории числа и падежа

См. Карневская, Е.Б. Английский язык: на пути к успеху: пособие для учащихся ст. кл. общеобразоват. шк., гимназий, колледжей / Е.Б. Карневская, З.Д. Курочкина, Е.А. Мисуно. – 3-е изд., дополнен. - Минск: Аверсэв, 2007. – 400 с.

С. 99-102, 104-107.

THE ENGLISH NOUN

Nouns are words that name persons, places, things, feelings and ideas.

In English, as in other languages, nouns can be classified in several ways. First of all there are common and proper nouns.

Common nouns: user, benefit, cost, industry, partnership

Proper nouns: London, Switzerland, Deming, International Organization for Standardization

Common nouns are further classified according to their meaning into concrete, abstract, material and collective nouns.

Concrete nouns: standard, purchaser, product, requirement

Abstract nouns: distribution, life, absence, quality

Material nouns: air, water, soil, light, copper

Collective nouns: equipment, society, staff, government, company

As in Russian, Belarusian and other languages, English nouns vary in gender, case and number.

THE CASE OF ENGLISH NOUNS

There are two cases in English: the common case and the possessive case.

Our country — our country's economy

*Geneva— **Geneva's** coordinator*

The possessive case is used to denote the possession of particular things, qualities and characteristics.

The rules for the formation and pronunciation of the possessive case are the following:

Singular nouns and names form the possessive case by adding ***'s***.

*the **manufacturer's** recommendations, **Mendeleev's** periodic table*

If a name ends in the letter **"s"**, either ***'s*** or only an apostrophe **(')** is added.

Leibniz's *(or Leibniz') rule*

Whitworth's *(or* ***Whitworth')*** *thread*

No matter how the possessive form is written in such cases, it is normally pronounced as [iz].

If two or more names form a single team or group, ***'s*** is added to the last name only.

Bose and ***Einstein's*** *statistics*

But ***'s*** is added after each name to show individual possession.

Tesla's *and* ***Edison's*** *work on alternating current*

Regular plurals form the possessive case by just adding an apostrophe **(')**.

*the us****ers'*** *needs*

the ***workers'*** *tools*

Irregular plural nouns form the possessive case by adding ***'s***.

the ***workmen's*** *compensation board*

feet's *distance*

Compound nouns form the possessive case by adding ***'s*** to the last word.

*custom-house****'s*** *examination*

THE NUMBER OF ENGLISH NOUNS

According to number nouns in English can be in singular and plural.

a standard – standards, an official – officials, a difference – differences

However, only countable nouns have both singular and plural forms. Uncountable nouns which include material and abstract nouns are used mainly in the singular form.

activity, development, distribution, supply, etc.

Most countable nouns are made plural by adding -s/-es. These are regular plural nouns. The rules of their formation are the following:

-s is added to nouns ending in vowels or single consonants

a degree — degrees, a tool — tools, a device — devices, a market — markets

-y preceded by a vowel

a tray — trays, a key — keys, an alloy — alloys

-es is added to nouns ending in -s, -sh, -ch, -x, -z

a process — processes, a tax — taxes, an inch — inches, a switch – switches

-o preceded by a consonant

a cargo — cargoes, an echo — echoes

but*: a kilo — kilos, a radio — radios*

- **y** preceded by a consonant where -y is changed into -i

a body — bodies, a country — countries, a laboratory – laboratories

-f where -f is changed into -v

a life — lives, a half— halves, a shelf— shelves

but*: a roof — roofs, a chief — chiefs, a proof— proofs, a safe— safes*

There are some uncountable nouns which are plural in form and always take a plural verb:

overalls, binoculars, glasses, goggles, scales, scissors, arms, authorities, belongings, brains, customs, expenses, goods, riches, stairs, talks, wages

Some nouns borrowed from Greek and Latin saved the form of plural of these languages:

datum –data	*maximum – maxima*
addendum – addenda	*minimum – minima*
index – indices	*phenomenon – phenomena*
crisis – crises	*criterion – criteria*
basis – bases	*curriculum – curricula*
appendix – appendices	

2. Имя прилагательное: категория степеней сравнения; сравнительные конструкции

См. Практическая грамматика современного английского языка / Л. В. Хведченя [и др.] ; под ред. Л. В. Хведчени. – Минск: Интерпрес-сервис; Книжный Дом, 2002. – 688 с.

См. Карневская, Е.Б. Английский язык: на пути к успеху: пособие для учащихся ст. кл. общеобразоват. шк., гимназий, колледжей / Е.Б. Карневская, З.Д. Курочкина, Е.А. Мисуно. – 3-е изд., дополнен. – Минск: Аверсэв, 2007. – 400 с.

С. 169-171, 174-175.

THE ADJECTIVE

Adjectives are words expressing a quality of a substance. According to their morphological structure adjectives are divided into:

1) *simple*: *exact, large, cheap, heavy, clean, square, easy, fair*;

2) *derivatives* (have suffixes, prefixes or both): *powerful, useless, unreliable, dangerous, measuring, accurate, technical, economic, inefficient, private, environmental;*

3) *compound*: *pollution-free, non-governmental, widespread, worldwide, interchangeable.*

DEGREES OF COMPARISON

We use degrees of comparison to talk about the differences between two or more things.

Form	Positive adjective (Adj)	Comparative	Superlative
a. One-syllable adj. b. One-syllable adj ending in y	strong easy	stronger easier but: less strong less easy	the strongest the easiest but: the least strong the least easy
c. Adjs with two or more syllables	important reliable	more important less reliable	the most important the least reliable
d.Irregular adjectives	good bad little many/much	better worse less more	the best the worst the least the most

As the planet is threatened to run out of many of its precious resources (water, minerals, oil and gas, fish, etc.), prices tend to increase thereby increasing the need of more accurate measurement.

Comparative degree is used to compare two things or situations. We use the comparative + than.

Generally the accuracy requirements for initial verification are more stringent than those for subsequent verification or inspection.

You can also compare things using conjunction **so … as** or **as … as** and the positive degree of the adjective.

A designated manufacturer is exempted from verification for the "type-approved specified measuring instruments" as long as self-inspection, which replaces official initial verification, is conducted.

Superlative degree is used to compare more than two things.

The field of environmental protection and pollution monitoring is heavily regulated and is already one of the most important measurement activities of modern legal metrology.

It is totally justified to say that the present trend of globalization of trade is the strongest thrust boosting the current importance of metrology and its rapid development.

It is expected that in this 21st century, environmental protection and resource monitoring will become the most important areas of legal metrology at par with trade metrology.

3. Местоимения: личные, притяжательные, указательные, вопросительные, неопределенные, возвратные

См. Карневская, Е.Б. Английский язык: на пути к успеху: пособие для учащихся ст. кл. общеобразоват. шк., гимназий, колледжей / Е.Б. Карневская, З.Д. Курочкина, Е.А. Мисуно. – 3-е изд., дополнен. – Минск: Аверсэв, 2007. – 400 с.

С. 139-140, 142-145, 147-149, 164.

PRONOUNS

PERSONAL, POSSESSIVE AND REFLEXIVE PRONOUNS

Personal		Possessive		Reflexive
Subjective case	Objective case	Proper	Absolute	
I	me	my	mine	myself
you	you	your	yours	yourself
he, she, it	him, her, it	his, her, its	his, hers, its	himself, herself, itself
we	us	our	ours	ourselves
you	you	your	yours	yourselves
they	them	their	theirs	themselves

• Personal pronouns are used as the subject of a sentence.

Referring to measurement needs and measurement devices, scientists and engineers often quote Lord Kelvin, Sir William Thomson: "I often say that when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of Science, whatever the matter may be."

• Possessive proper pronouns are used before a noun as an attribute.

Metrology includes units of measurement and their standards, measuring instruments and their field of application, and all theoretical and practical problems relating to measurement.

The International Bureau of Weights and Measures (BIPM) operates through a series of Consultative Committees, whose members are representatives of the national metrology laboratories of the Member States of the Convention, and of its own laboratory.

• Possessive absolute pronouns are mainly used as a predicative. They are never followed by a noun.

It's not my optical comparator, it's yours.

Which gauges are theirs?

It isn't her measuring device, hers is broken.

• Reflexive pronouns are used in a sentence after the verb and show that the subject does an action to or for the subject.

The national standards are used to calibrate secondary standards of the country, which are themselves normally used to calibrate working standards.

• When a reflexive pronoun is placed after the subject or at the end of the sentence it emphasizes the fact that the subject and not someone else does the action.

A lack of standardization may even affect the quality of life itself: for the disabled, for example, when they are barred access to consumer products, public transport and buildings because the dimensions of wheel-chairs and entrances are not standardized.

DEMONSTRATIVE PRONOUNS
THIS/THESE, THAT/THOSE

The demonstrative pronouns can be used both as nouns and as adjectives.

- Used as adjectives, the demonstrative pronouns *this/these, that/those* agree with the following nouns in number.

Manufacturers, public authorities and non-governmental organizations also demand sampling and test methods, measurements and instrumentation, regulations and standards to prevent human beings to suffer from this new nanotechnological development.

But these needs are in fact important to much more than just scientists and engineers.

This pulse encoder has only one track with the great number of holes in it.

- *This/these, that/those* can be used with *one/ones* when there is some idea of comparison or selection.

Which of the miscellaneous measuring devices do you like more? – This new one.

This gauge is too heavy. I'll take that one.

- Used as nouns, *this* and *that* can represent a previously mentioned fact or idea.

The thermocouple was created by Voege in 1906. That was first used as a vacuum gauge.

- *That/those* can be used instead of a noun already mentioned.

The price of tin is higher than that of copper.

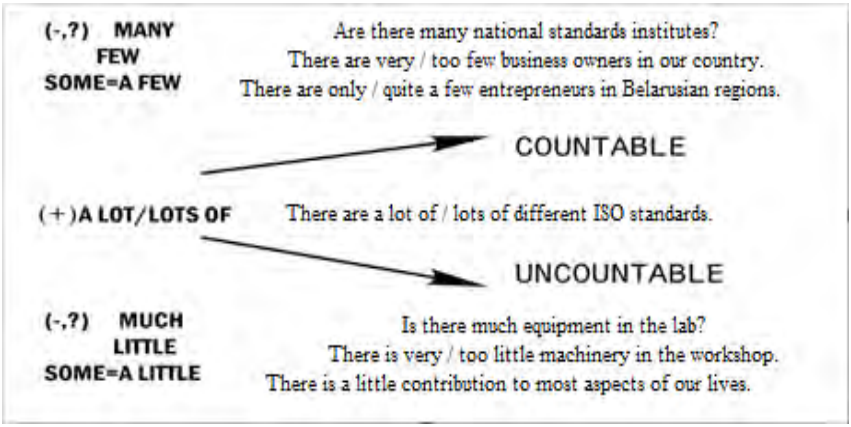
At our factory there are a few machines similar to those described in the Internet.

- Sometimes the pronoun can be followed by a defining relative clause.

ISO develops only those standards for which there is a market requirement.

Scientific Metrology is that part of metrology which deals with problems common to all metrological questions irrespective of the quantity measured.

INDEFINITE PRONOUNS



As far as instrumentation is currently designed and operated, a lot of technologies are being used based on X-Ray, microscopy, spectrometry, spectroscopy and optics.

In fact, apart from a very few technological niche applications, there is a recent and ongoing development of new-technology based instrumentation and devices dedicated to characterize nanoproducts and nanomaterials.

A few countries also regulate measurements in the following areas, such as public health and human safety (e.g. in the medical field and road safety), environmental protection and pollution monitoring, and resource monitoring and control.

Are there many products or services that conform to International Standards?

I haven't much work to do today.

Little amount of wheat has been unloaded today.

SOME, ANY, NO

Positive	Interrogative	Negative
Some	Any	No / not any
There are some calipers in the lab.	Are there any calipers in the lab?	No, there are no calipers in the lab. / No, there are not any calipers in the lab.

In addition, besides the traditional measurement disciplines and quantities (length, mass, magnetism, etc.) and because properties are different when materials have some nanoscale dimension, there are new technological requirements to characterize nanomaterials.

• Some is used as a noun instead of nouns in plural.

The buyers wanted to get some samples of our manufacturers, and we sent them some.

• Some can also be used in requests.

Why didn't you buy some new equipment?

I want to have some outside diameter micrometer. Have you got any?

Have you bought any templates?

• Any can also be used in positive statements with the meaning of 'it does not matter who / which / what'.

In physical science the first essential step in the direction of learning any subject is to find principles of numerical reckoning and practical methods for measuring some quality connected with it.

In any case, measurement and characterization are needed at the top of any process.

Record keeping is an essential component of any calibration program.

• The indefinite pronoun *no* is used before nouns in singular or plural as an attribute.

If there were no standards, we would soon notice.

I have no time to help you today.

Compound Indefinite Pronouns

	Positive	Interrogative	Negative
people	someone somebody	anyone anybody	no one nobody
things	something	anything	nothing
places	somewhere	anywhere	nowhere

• The use of these compounds in different types of sentences is similar to that of *some, any* and *no* from which they are formed. However, the syntactic function of the compound pronouns in a sentence is different:

they are used as an object or subject while some, any, no are used as an attributes.

Somebody is measuring dimensions the workshop.

There isn't anything in the box.

There was nothing interesting for him as a purchaser.

4. Числительные: простые, производные и сложные, количественные, порядковые, дробные

См. Карневская, Е.Б. Английский язык: на пути к успеху: пособие для учащихся ст. кл. общеобразоват. шк., гимназий, колледжей / Е.Б. Карневская, З.Д. Курочкина, Е.А. Мисуно. – 3-е изд., дополнен. – Минск: Аверсэв, 2007. – 400 с.

С. 181-183.

THE ENGLISH NUMERAL

Numerals are subdivided into two groups: cardinal (количественные числительные) and ordinal (порядковые числительные).

Cardinals	Ordinals
1 — one	the first
2 — two	the second
3 — three	the third
4 — four	the fourth
5 — five	the fifth
6 — six	the sixth
7 — seven	the seventh
8 — eight	the eighth
9 — nine	the ninth
10 — ten	the tenth
11 — eleven	the eleventh
12 — twelve	the twelfth
13 — thirteen	the thirteenth
14 — fourteen	the fourteenth
15 — fifteen	the fifteenth
16 — sixteen	the sixteenth
17 — seventeen	the seventeenth

18 — eighteen	the eighteenth
19 — nineteen	the nineteenth
20 — twenty	the twentieth
30 — thirty	the thirtieth
40 — forty	the fortieth
50 – fifty	the fiftieth
60 — sixty	the sixtieth
70 — seventy	the seventieth
80 — eighty	the eightieth
90 — ninety	the ninetieth
100— a/one hundred	the (one) hundredth
200 — two hundred	the two hundredth
1,000— a/one thousand	the (one) thousandth
1,345 — a/one thousand three hundred and forty-five	the (one) thousand three hundred and forty-fifth

In cardinal numerals which consist of *tens* (десятки) and *units* (единицы) the two words *are hyphenated* (пишутся через дефис).

56 — fifty-six, 91 — ninety-one

- When cardinal numerals ending in *one* (like *thirty-one, fifty-one*) are used before a noun, they require the plural form of the noun.

thirty-one students, forty-one years

(Compare with Russian *тридцать один студент, сорок один год*, where the noun is used in the singular.)

- The numerals *hundred, thousand* and *million* used in the singular are always preceded by the Indefinite article *a* or the numeral *one*.

a hundred, one hundred and fifty-two

- When the numerals *hundred, thousand* or *million* are preceded by a number other than one, they do not take the ending -s.

400 children (four hundred)

5,900people (five thousand nine hundred)

8,600,000 dollars (eight million six hundred thousand)

- The cardinal numerals *dozen, ten, hundred, thousand, million* take the plural ending *–s* before *of + a plural noun* if the above numerals are not preceded by another numeral or a pronoun.

millions of consumers, dozens of companies, thousands of business organizations,hundreds of thousands of people, etc.

but*: many thousand people, two hundred users , three dozen stakeholders*

• Unlike the numerals *hundred, thousand* the numeral *million* can be used in the plural form before an "of-phrase" even when it is preceded by another numeral. Compare: *three million people, millions of people and three millions of people* but *five hundred/ thousand experts, hundreds/thousands of experts.*

5. Наречие: классификация, категория степеней сравнения

См. Карневская, Е.Б. Английский язык: на пути к успеху: пособие для учащихся ст. кл. общеобразоват. шк., гимназий, колледжей / Е.Б. Карневская, З.Д. Курочкина, Е.А. Мисуно. – 3-е изд., дополнен. – Минск: Аверсэв, 2007. – 400 с.

С. 169-171, 178-179.

ADVERBS

• The majority of English adverbs are formed from adjectives by adding *-ly*: *slow — slowly; safe — safely; simple — simply; typical — typically; particular — particularly, exact – exactly*. Adverbs are used in a sentence as adverbial modifiers and refer to the verb.

Countries are increasingly regulating resource monitoring and control based on adequately accurate measurement.

The net quantity of a prepackage shall accurately reflect the nominal quantity within the reasonable limits.

• Some adverbs have the same form as the corresponding adjectives: *fast, hard, long, wrong, late, high, straight, etc.*

Traceability data may be necessary after long periods of time, when some supply chain company may be no longer reachable.

In response to this essential need for quality measurement, the typical reaction has long been the creation of a local quality measurement enclave tailored to parochial needs of the users.

• There are also a few adjectives and adverbs which end in *-ly*. Most of them have been derived from nouns denoting a period of time: *daily, monthly, weekly, hourly, early.*

• *Developments in metrology don't often have a direct impact on the daily lives of people or society. (adj.)*

It is recommended that process or product temperature monitoring equipment be calibrated daily, before use. (adv.)

• *The accuracy of temperature readings for a RTD should be compared to a NIST reference thermometer at least monthly depending on use in the facility and type of device. (adv.)*

• *Early measuring instruments used analog (electronic) filters. (adj.)*

I want to finish work early today. (adv.)

• Some adverbs have two forms (with *-ly* and without *-ly*). In most cases they differ in meaning.

near (возле) — nearly (почти)

Normally, pressure changes near a microphone do not affect the voltage very much, and the signal must be amplified.

Measurements are essential to nearly all aspects of human activity ranging from production control, measurement of environmental quality, health and safety assessment, conformity assessment of products to consumer protection and fair trade assurance.

late (поздно) — lately (в последнее время)

Lean manufacturing techniques began to be widely employed late in 1980s.

I've been working hard lately.

free (бесплатно) — freely (свободно)

All members admitted free.

The spindle should run freely and smoothly throughout its length of travel.

hard (усердно, много) — hardly (едва)

You must work very hard.

The importance of improving and maintaining the quality of manufactured goods can hardly be overemphasized.

high (высоко) — highly (очень)

He aims high.

The transducer should be minimally sensitive to unwanted signals and highly sensitive to desired signals.

deep (глубоко) — deeply (тщательно, сильно)
Magma is moving from deep in the earth.
Metrologists were always deeply interested in the problem of error or uncertainties.

sharp (точно) — sharply (резко)
Wait for me at ten o'clock sharp.
Inspection costs increase sharply as gauge accuracy improves.

DEGREES OF COMPARISON OF ADVERBS

With adverbs of two or more syllables the comparative and superlative degrees are formed by putting *more* and *most* before the positive form. Adverbs consisting of one syllable and the adverb early form the degrees by adding *-er, -est*.

With the exception of the kilogram whose definition is based on a physical artefact, the definitions of all other base units are now based on natural phenomena which can be reproduced more easily at the level of national laboratories.

More technically advanced solutions are available for more demanding applications, but will generally be more expensive.

The steel rule is more commonly known as a ruler.

For higher bandwidth oscilloscope, where the trace may move more rapidly across the phosphor target, a positive post-deflection acceleration voltage of over 10,000 volts is often used, increasing the energy (speed) of the electrons.

The most commonly used scales include the Fahrenheit, Celsius, Kelvin and Rankine.

Micrometers are the most frequently used hand-measuring instruments in linear metrology.

6. Глагол: видо-временная система, действительный и страдательный залог, модальные глаголы и их эквиваленты

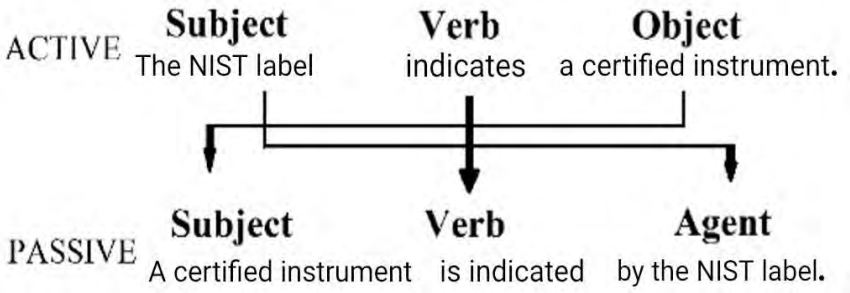
См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 13–33.

См. Митрошкина, Т.В. Английский язык: полный курс подготовки к централизованному тестированию и экзамену / Т.В. Митрошкина. – Минск: Тетралит, 2013. – 512 с.

https://drive.google.com/file/d/0B46Mchya94h1cm9xaVNtakdCa1E/view?usp=sharing С. 131-137, 143-149, 155-160.

Changing from the active to the passive



SIMPLE TENSE FORMS

The Present Simple describes:

1. Habitual facts or repeated actions.

He starts work at 8 a.m. every day.

2. Universal truths and permanent characteristics, situations or states.

She teaches Metrology at the University.

3. Scheduled facts and events.

The classes finish at 3 p.m. (according to the time-table).

Time words with the Present Simple: *often, always, usually, seldom, rarely, as a rule, every day (week, year*) etc.

tense	*positive*	*negative*	*questions*
Present Simple Active	I/you/we/they enter the calibration code. He/she/it enters the calibration code.	I/you/we/they do not **(don't)** enter the calibration code. He/she/it does not **(doesn't) enter** the calibration code.	Do you/we/they enter the calibration code? Does he/she/it enter the calibration code?
Present Simple Passive	The calibration code/codes is / are entered by him.	The calibration code/codes is / are not entered by him.	Is / Are the calibration code / codes entered by him?

The Past Simple describes:

1. A single past action or a past state.

We noticed those products to be of poor quality two years ago.

2. A succession of single past actions.

I turned on the Model 2000, selected the DCV function, chose SLOW as the RATE and started the calibration process.

Time words with the Past Simple: *ago, last year (week, month), yesterday, in 1997* etc.

tense	*positive*	*negative*	*questions*
Past Simple Active	I/you/we/they/ he/she/it connected the sense leads to the calibrator.	I/you/we/they/ he/she/it did not **(didn't) connect** the sense leads to the calibrator.	Did you/we/they/ he/she/it connect the sense leads to the calibrator ?
Past Simple Passive	The sense lead/leads was / were connected to the calibrator by him.	The sense lead/leads was not/ were not connected to the calibrator by him.	Was / Were the sense lead/ leads connected to the calibrator by him?

The Future Simple describes:

1. A predicted future action, a happening which is inevitable.

Next year he will be 18.

2. An action which the speaker regards as possible, probable or likely to happen in the future.

The program will ensure the recall or removal from service of any standard or equipment that has exceeded its calibration interval or is otherwise judged to be unreliable.

3. An action decided on spontaneously, out of circumstances.

It's hot in the office. I will turn on the air conditioning.

Time words with the Future Simple: *tomorrow, in a week (month, year), next year, in 2030* etc.

tense	*positive*	*negative*	*questions*
Future Simple Active	I/you/we/they/he/she/ it will examine the field instrument visually.	I/you/we/they/he/she/ it will not examine the field instrument visually.	Will you/we/ they/he/she/it examine the field instrument visually?
Future Simple Passive	The field instrument will be examined visually by him.	The field instrument **will not (won't) be** examined visually by him.	Will the field instrument be examined visually by him?

PROGRESSIVE TENSE FORMS

The Present Progressive describes:

1. an activity at or around the time of speaking

At present we are verifying that the identification marking on the instrument is distinct and in agreement with the Test record .

2. a fixed future plan

Next week we are buying new equipment.

Time words with the Present Progressive: *now, at the moment*, *nowadays* etc.

tense	*positive*	*negative*	*questions*
Present Progressive Active	I/he/they am/is/are carrying out the impact measurement.	I/he/they am/is/are not carrying out the impact measurement.	Is/Are he/they carrying out the impact measurement?

Present Progressive Passive	The impact measurement/ measurements is/are being carried out.	The impact measurement/ measurements is/are not being carried out.	Is/Are the impact measurement/ measurements being carried out?

The Past Progressive describes:

1. an activity at a definite time in the past (*at 4pm yesterday, from 3 to 5 yesterday, the whole day yesterday*).

He was writing a report at 5 pm yesterday.

2. an activity which is a time frame for another activity.

While we were carrying out the experiment the other team was recording the results.

tense	*positive*	*negative*	*question*
Past Progressive Active	He/they was/were rechecking the temperature readings.	He/they was/were not rechecking the temperature readings.	Was / Were he/they rechecking the temperature readings?
Past Progressive Passive	The temperature reading/readings was/were being rechecked.	The temperature reading/readings was/were not being rechecked.	Was/were the temperature reading/readings being rechecked?

The Future Progressive describes:

1. an activity at a definite time in the future (*at 4pm tomorrow, from 3 to 5 tomorrow, the whole day tomorrow)*.

We will be discussing computerized measurement systems development at 3 o'clock seminar tomorrow.

tense	*positive*	*negative*	*question*
Future Progressive Active	He/they will be measuring output voltage.	He/they will not **(won't) be** measuring output voltage.	Will he/they be measuring output voltage?

PERFECT TENSE FORMS

We use the Present Perfect to talk about past events with a connection to the present (focus on the result but not on the time).

The manufacturer has already determined the instrument's functionality (now I can use it).

Thermometers that have been dropped on the floor or used frequently must be calibrated more often.

Time words with the Present Perfect: *just, already, yet, ever, this week, all my life, lately, recently, since, for.*

tense	*positive*	*negative*	*questions*
Present Perfect Active	They/he have/has configured the instrument.	They/he ha**ven't/hasn't** configured the instrument.	Have/has they/he configured the instrument?
Present Perfect Passive	The instrument/instruments has / have been configured.	The instrument/instruments **hasn't** / **haven't been** configured.	Has/have the instrument/instruments been configured?

We use the Past Perfect to describe an activity that happened earlier than another activity in the past or an action completed by a certain time in the past.

By the time we arrived they had already changed the command parameter of calibration resistance.

Time words with the Past Perfect: *by, by the time, after, before, as soon as* and many of the time words used with the Present Perfect.

tense	*positive*	*negative*	*questions*
Past Perfect Active	They had measured different quantities in various areas.	They **hadn't** measured different quantities in various areas.	Had they measured different quantities in various areas?
Past Perfect Passive	The different quantities had been measured in various areas.	The different quantities **hadn't been** measured in various areas.	Had the different quantities been measured in various areas?

We use the Future Perfect to describe an action that will be completed by a certain time in the future.

They will have completed the calibration procedure by 5 p.m. tomorrow.

tense	*positive*	*negative*	*questions*
Future Perfect Active	They will have found all visual defects of a multimeter.	They will not **(won't) have** found all visual defects of a multimeter.	Will they have found all visual defects of a multimeter?
Future Perfect Passive	All visual defects of a multimeter will have been found.	All visual defects of a multimeter will not **(won't) have** been found.	Will all visual defects of a multimeter have been found?

REMEMBER: No Future in Time Clauses. Like all future forms, the Future Perfect cannot be used in clauses beginning with time expressions such as: *when, while, before, after, by the time, as soon as, if, unless*, etc. Instead of Future Perfect, Simple Present is used.

MODAL VERBS

Modal verbs show the speaker's attitude or feelings about a situation. Modal verbs are *can, could, may, might, must, ought to, will, would, shall, should, have to, need to etc.*

- Modal verbs take no – *s* in the third person singular (except for *have to* and *need*).

The manufacturer must refer to harmonized European standards.

The packer (or importer, if the prepackages are produced outside the common market) has to ensure that his prepackages meet the requirements of the European Directives.

- Modal verbs come before the subject in questions and are followed by ***'not'*** in negations.

Could I use your signal generator?

*Any automated control system **shouldn't** require human intervention.*

Modal verbs are followed by the infinitive without *to*, (except for *ought to, have to, need to*). *Sorry, I **can't test** these electronic circuits. I have to repair the oscilloscope.*

Modal verbs are used to express:

a. Ability

Can / Be able to (ability in the present/future).

The calibration procedure can only be conducted by a certified Technical Supervisor.

Any automated control system requires a measurement system that is able to perform dedicated measurement tasks.

For example, a bimetal coil thermometer can detect a 1/0 degree temperature change, while a thermistor may detect a 0.1 degree temperature change.

Could / Was/were able to (ability in the past for repeated actions)

Those oscilloscopes could / were also able to display non-periodic signals or transients.

Was / were able to (= managed to) (ability in the past for repeated actions or a single action).

Many of these units were able to interface with a computer to assist with record keeping (single action).

Possibility / Probability

May / Might / Could + present infinitive = perhaps. It's possible that something will happen in the future or perhaps it's true at the moment.

Other acceptable methods may / might / could also be used to calibrate temperature monitoring instruments. (It's possible that he will pass his test).

Might is the past form of may. Might can also be used for present situations, too.

In contrast to what one might expect from the ampere definition, the most commonly units are the volt and the ohm, because it is much easier to maintain and compare voltages and resistances than currents.

Should / Ought to + present infinitive = something is probable now or in the future *This discussion seems to support the view that metrology in chemistry should / ought to be "straightforward", because "it is largely concerned with ratios and these ratios have no direct requirement for traceability."*

b. Permission

Can (informal) / Could (more polite)

Can / Could I use this sample in an atomic clock? Of course you can / I'm afraid you ***can't / mustn't****.*

May /Might (very formal)

May /Might I affect the experimental apparatus used for speed of sound measurements, please?

c. Request / Offer / Suggestion

Can (informal request) *Can you help me?*

Could (polite request) *Could you help me with the drug delivery system?*

Would you like (polite offer) *Would you like the latest results?*

Shall I / we, Can I / we (Do you want me / us to …?) (informal offer / suggestion)

Shall I help you with your theoretical research?

Shall we install a new measuring instrument?

d. Advice / Obligation / Necessity / Prohibition

Should + present infinitive (= It is the best thing to do; I advise you to)

Specifically, photodiodes should be used under maximum reverse bias rather than unbiased. (general advice)

You **shouldn't** do something = It isn't a good thing to do

*You **shouldn't** trust everything you read on the Net.*

Had better (=It's a good idea – advice for a specific situation)

I think you'd better call them straightaway.

Must (strong obligation, duty or personal feelings of necessity, = It's necessary; I'm obliged to)

New equipment must be calibrated upon receipt and before putting into service.

Each year, an NIST thermometer must be recertified to assure accuracy.

Have to (obligation or external necessity, = It's necessary; I'm obliged to)

You have to pay the bill by the end of the month. (that's the company rule)

Must is used only for present and future situations. It borrows the rest of its tenses from have to. To form questions and negations of have to we use do / does (Present Simple) and did (Past Simple).

Did you have to stay late at work yesterday? Yes, I had to email some urgent letters.

Need to (It's necessary = have to)

Unfortunately, I need to work this evening.

Needn't + present infinitive / don't have to / don't need to (it's not necessary in the present or future).

*You **needn't** improve this waveguide operation. That is his doing.*

*You **don't need to / don't have to** do it now. You can do it later.*

Mustn't (= it's forbidden; don't do it).

*You **mustn't** be late for the conference.*

Can't (= you aren't allowed to)

*You **can't** apply the device without calibration.*

7. Неличные формы глагола: инфинитив, причастие, герундий и конструкции с ними

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 44-85.

THE INFINITIVE

	Forms of the Infinitive	
	Active voice	Passive voice
Present Simple	(to) repair	(to) be repaired
Present Continuous	(to) be repairing	--
Perfect	(to) have repaired	(to) have been repaired
Perfect Continuous	(to) have been repairing	--

The Present Simple Infinitive refers to the present or future.

When products meet our expectations, we tend to take this for granted.

ISO standards also serve to safeguard consumers, and users in general, of products and services - as well as to make their lives simpler.

The Continuous Infinitive expresses an action happening now.

He must be measuring voltage by sampling the sine-shaped signal now.

The Perfect Infinitive shows that the action of the Infinitive happened before the action of the verb.

Other atoms with two-photon transitions appear to have been investigated for optical frequency standards.

The Perfect Continuous Infinitive is used to put emphasis on the duration on the action of the Infinitive, which happened before the action of the verb.

She looks tired. She seems to have been working all morning.

The to Infinitive is used:

1. to express purpose = in order + to Infinitive

Some countries not opting for standard pack sizes have made it mandatory to declare unit price for goods (in order)to facilitate price comparison.

In order to translate the legal units into practice for application in various fields, they have to be physically realised.

2. to express reason after too / enough constructions

Proper characterization of manufactured nanosized samples are still reserved for few and advanced laboratories and is mostly too slow to be used in production control.

A working standard in one location may be good enough to serve as a secondary or even a national standard in another.

3. with it + be + adjective

It is not always possible for a package to contain exactly the nominal quantity (the quantity stated on the package).

It's important to keep the tip of the thermometer immersed a minimum of 2 ½ inches (6.4 cm) without touching the bottom of the container.

It's essential to know physical quantities and numerical values. =

To know physical quantities and numerical values is essential.

4. after certain verbs. These include: *agree, begin, decide, would like, intend, manage, want, use, appear, seem, claim etc.*

The engineers want to design a new cryogenic radiometer optimized for laser radiation, the so-called primary standard (PS) radiometer.

Note: we can use the negative infinitive not to

The company decided not to develop metrology infrastructure in new areas of environment, chemical, medical and food.

5. after *allow, enable, permit, recommend, expect, encourage, cause, force + object (see Complex Object)*

This easy access and the widespread and cheap availability of information may well drive a globalization of the calibration service market and will enable users to choose the supplier that best meets their needs.

6. after question word s(*where, how, what, who, which)*

This boiled down to huge, detailed debates about how to make flat surfaces and the merits of end and line gauges for dimensional measurement references.

Note: If two infinitives are joined by ***'and'*** or **'or'**, the **'to'** of the

second infinitive can be omitted.

I want you to write and explain these experimental findings.

The Infinitive without to (Bare Infinitive) is used:

1. after modal verbs (except for *ought to, have to, need to, to be to)*

A measurement standard can be a physical measure, measuring instrument, reference material or measuring system intended to define, realize, conserve or reproduce a unit or one or more values of quantity to serve as a reference.

2. after *make, let, see, hear, feel + object (see Complex Object)*

As an example, let us consider an analytical balance with 100 g capacity and a scale that reads from zero to 100.

BUT in the passive form: be made / be heard / be seen + to infinitive (*see Complex Subject*)

He was made to control radio frequencies.

Note: *help* can be followed by a to Infinitive or an Infinitive without to.

Chemical metrology monitors food and toxic substances in the human body while the breath analyser and radar speed measurement helps (to) ensure our safety on the road.

Complex Object with the Infinitive

The structure can be:

Subject + Verb + Object + to Infinitive or Bare Infinitive

The *Object* can be a name, a noun or an object pronoun *(me, you, him, her, us, them)*

We expected Paul to obtain indications to high resolution.

Would you like me to determine the load more precisely?

Complex Object is used after the following verbs: *want, would like, expect, ask, allow, enable, permit, let, force, cause, make etc.*

Complex Subject with the Infinitive

The structure can be:

1. Subject + Verb in the passive form + to Infinitive

He is said to be a good metrologist.

Complex Subject is used after the following verbs: *see, hear, think, consider, know, expect, believe, say, report etc.*

2. Subject + Verb in the Active form + to Infinitive

For example, as purchasers or users of products, we soon notice when they turn out to be of poor quality, do not fit, are incompatible with equipment we already have, are unreliable or dangerous.

Complex Subject is used after the following verbs: *seem, appear, happen, turn out, prove etc.*

1. Subject + be + adjective / adverb + to Infinitive

Manufacturers are free to choose among these European bodies.

She was happy to win the prize.

He is sure to come.

The information has to be conspicuously, legibly and unambiguously displayed on the "principal display panel", that is the part of the package or of its label which is likely to be shown or examined by the customer under normal conditions of sale.

Complex Subject is used after the following adjectives: *happy, glad, sorry, pleased, sure, (un) likely, certain etc.*

THE PARTICIPLE

The participle is one a non-finite form of the verb (a verbal). Like the verb it has the following forms:

	Participle I		Participle II (Past Participle)
	Simple	Perfect	
Active Voice	doing	having done	----
Passive Voice	being done	having been done	done

Relative clauses with the participle I simple and participle II are often used in technical descriptions. They allow you to provide a lot of information about a noun using as few words as possible:

Standards establishing an international consensus on terminology make technology transfer easier and can represent an important stage in the advancement of new technologies = Standards which establish an international consensus on terminology make technology transfer easier and can represent an important stage in the advancement of new tech-

nologies.

The equipment being set up in the lab now = the equipment which is being set up in the lab now.

Ideally, good measurement platform should give you the ability to select the type of signal-conditioning needed for your application = Ideally, good measurement platform should give you the ability to select the type of signal-conditioning which is needed for your application.

We don't use perfect participles in this case.

The participle clauses can also give information about reason, result, condition or time:

	Full clause	*Participle clause*
Reason	*- Since (because) he is a professional engineer he realizes that machines become more and more accurate.*	*- Being a professional engineer he realizes that machines become more and more accurate.*
	- As (Since) the flowmeter is installed by a specialist it functions correctly.	*- Being installed by a specialist the flowmeter functions correctly.*
Result	*- I had no time to write short notes because I had spent long hours to learn the principles of metrology management system.*	*- I had no time to write short notes having spent long hours to learn the principles of metrology management system.*
Condition	*- If you test the laser carefully it will run smoothly.*	*- (If) tested carefully the laser will run smoothly.*
Time / Sequence	*- While he was writing a report he followed certain steps.*	*- Writing a report he followed certain steps.*
	- After he had calibrated the front amplifier he tested it.	*- Having calibrated the front amplifier* he tested it.
	- After the standards had been improved they were published in a directory of standardizing organizations.	*- Having been improved the standards were published in a directory of standardizing organizations.*

THE GERUND

The gerund is one a non-finite form of the verb (a verbal). Like the verb it has the following forms:

	Simple	Perfect
Active Voice	supporting	having supported
Passive Voice	being supported	having been supported

The gerund can be the subject, object or complement of a sentence.

For example:

- *Weighing and measuring in the presence of the purchaser is now tending to be gradually reduced and is expected to be limited to a few selected items in the near future.*(subject)
- *Running fits with greater clearances without any special requirements for accuracy of guiding shafts.* (subject)
- *The contact point moves providing a GO to NO GO gauging range*. (object)
- *Their task is obtaining the required information from individual instrument readings. (complement)*

The gerund is also used after prepositions *in, after, on, by, without, before.*

For example:

- *We find it almost impossible to describe anything without measuring it – hours of sunshine, chest width, alcohol percentages, weights of letters, room temperatures, tyre pressures and so on*.
- *They offer the ability to measure temperature of objects precisely without needing to touch the item being measured, and without needing to be placed within what can be extremely hot and dangerous*.
- *By developing and improving methods we receive more reliable and accurate data*.
- *Before starting the test it is necessary to level the machine tool.*
- *In solving the problem he made some mistakes.*
- *In understanding load cells, you'll be better able to comprehend the systems in which they are used.*

Mind the most frequently used verbs and expressions with prepositions followed by the gerund:

to object to, to be capable of, to rely on, to succeed in, to be good at, to be fond of, to be interested in, to be proud of, to insist on, to be responsible for, to be keen on, to be sorry for/about, to approve of, to be engaged in, to depend on, to prevent from, to concentrate on, to look forward to, etc.

For example:

- We *look forward to having stand-alone measurement instruments*. (*to* is a preposition and not a part of the infinitive.)
- *They insisted on testing a new thermometer*.

Mind the most frequently used verbs and constructions without prepositions followed by the gerund:

*to avoid, to enjoy, to keep, to finish, to mind, to suggest, to dislike , **to involve, can't help, to discuss, to admit ,to complete, to deny, to mention, it's no use, it's worth, etc.***

For example:

- *His work involves comparing and determining the conformance of product to specifications*.
- ***It's worth taking** part in the forthcoming conference*.
- *He enjoys working as an engineer*.

8. Словообразовательные модели (существительное, прилагательное, наречие, глагол)

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 3-6.

WORD BUILDING: PREFIXES

We can form new words by using prefixes and suffixes,

e.g. un-employ-ment

prefix + root+ suffix

Prefixes come before the root word and usually change its meaning. Here are some common ones in Metrology.

Study the 'Prefixes of location'

Prefix	Meaning	Examples
trans-	= across	transmission, transfer
inter-	= between, among	interaction, interchangeability, international, interdependent, intertown
extra-	= beyond = outside = in addition to	extraordinary
tele-	= distant	telescope
bio-		biomaterials
infra-		infrared, infrastructure
thermo-	= heat	thermometer, thermoelectric

Study the 'Prefixes of size'

Prefix	Meaning	Examples
multi-	= many	multi-purpose, multitasking
super-	= more than, special	superconductor, supermarket
micro-	= very small	microstructure
semi-	= half, partly	semiconductor

Study 'Negative prefixes'

Negative prefix	Meaning	Examples
un-	= not	unemployment, unaware, unreliable
in-		incompatible, invisible
im-		impossible, improve
il-		illegal
ir-		irregular, irresponsible
non-		non-governmental, noncontact, non-conductor, non-

Negative prefix	Meaning	Examples
		essential, non-ferrous
mis-	= bad, wrong	misuse, misunderstand, mislead
mal-		malfunction
dis-	= opposite action	dislocation, disapprove, disagreement
de-	= reduce, reverse	decrease, deform, decentralize
down-	= to show that sth is bad or to make sth less important	downtime, downgrade
under-	= not enough	undercharge, undervalue, underpay, underproduction

Study 'Positive prefixes'

Positive prefix	Meaning	Examples
re-	= again, back	reorganize, reproducibility, reconsider, reconstruct, resell
co-/ com-/ con-	= together, with	connect, compatible, cooperation, coefficient
over-	= too much	overload, overcharge, overpay, overproduction
up-	= at or to a higher level of activity	update, upgrade, upload
nano-		nanomaterials, nanoscale
pyro-		pyrometer, pyrometry

WORD BUILDING: SUFFIXES

Suffixes change the class of the root word. For example, by adding the suffix –er, the verb *produce* becomes the noun *producer*. Suffixes can tell you if a word is a noun, adjective, verb or adverb.

Study the 'Job-forming suffixes'

Suffix	Meaning	Examples
-er	= a person, thing	manufacturer, purchaser,

Suffix	Meaning	Examples
	that does	end user, developer, supplier, customer, consumer, stakeholder, buyer
-or	~	regulator, director, inspector, inventor
-ist, -yst	= practitioner of	metrologist, physicist
-ian	~	technician
-ant	~	consultant
-eer	~	engineer
-al	= instance of	professional
-ee	= object of verb	consignee, lessee, payee, trustee

Study the "Noun-forming suffixes"

Suffix	Meaning	Examples
-ity	= quality of	electricity, property, ability, compatibility, reliability, safety, quality
-ment, -ics, -or	= activity, state = a thing which	detector, sensor, filter, imager, laser, generator, comparator
-ment	= process, result of	equipment, development, measurement, requirement, agreement government, payment, settlement
-ity		activity, conformity, conductivity
-cy		efficiency, accuracy
-ance, -ence	= process, state of	importance, performance, resistance absence, difference
-ion, -ation, -tion, -sion, -ssion	= process, state of, product of	distribution, legislation, delegation organization, standardization, contribution, association, provision, restriction

-ship	= status, state, quality of	partnership, membership, leadership
-y		delivery
-th		growth

Study the "Verb-forming suffixes"

Suffix	Meaning	Examples
-ize / -ise	= to make, various	characterize, catalise
-ate	= causative	calibrate, calculate
- ify	= causative, make	simplify, purify, falsify
- en	= make, become	strengthen, widen

Study the "Adjective-forming suffixes"

Suffix	Meaning	Examples
-able, -ible	= capable of being	changeable,comparable, convertible, compatible, responsible, reliable
-ful	= having, with	colourful, helpful, useful
-less	= without, lacking	dimensionless, useless, powerless
-al, -ic, -ical	= having the quality of, related to	computational, digital, magnetic, automatic, industrial, environmental, experimental
-ant, -ent		relevant, resistant, efficient, different
-ous	= having	enormous, dangerous
-ing		developing countries, pioneering work
-ive	= can do, does	active, comparative, effective

Study the "Adverb-forming suffix"

Suffix	Meaning	Examples
-ly	= in the manner of	digitally, electronically, usually, safely, officially, timely

9. Сослагательное наклонение

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 86-93.

10. Служебные слова: предлоги, союзы, союзные слова

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 96-109.

11. Простое предложение: типы простых предложений; порядок слов; члены предложения, способы выражения подлежащего и сказуемого,правила их согласования, специфические конструкции и обороты,типы вопросов.

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 37-39.

CONSTRUCTION THERE IS / THERE ARE

There as a kind of preparatory subject and the verb *to be* in the necessary form as a predicate are used in sentences which say that something:

a. exists (or does not exist) somewhere.

There are many gauges of different thickness (meaning: many gauges of different thickness exist).

There will be a dual beam microscope with highest performance for sample preparation, 3D characterization, nanoprototyping, and industrial failure analysis in some years, (meaning: a dual beam microscope with highest performance for sample preparation, 3D characterization, nanoprototyping, and industrial failure analysis will appear in some

years).

b. is located somewhere. In this case, the verb *to be* substitutes in meaning any verb of location (hang, lie, stand and so on).

Is there a multimeter with autoscaling or autopolarity features in the laboratory (meaning: is a multimeter with autoscaling or autopolarity features in the laboratory)?

QUESTION TYPES

There are five main types of questions, such as:

1. General questions, which require a Yes / No answer.

= auxiliary verb + subject + main verb (+ object)

Is this a non-contact sensor? – Yes, it is. // No, it isn`t.

Do you calibrate a dial against standards? –Yes, I do. // No, I don`t.

Are you measuring the temperature? – Yes, I`m // No, I`m not.

Have you finished this project? – Yes, I have // No, I haven`t.

Will an oscilloscope display non-periodic signals or transients? – Yes, it will // No, it won`t.

2. Special (Information) questions, which ask for specific information. These begin with question words, such as *what, who, when, where, why, which*, *how, how much / many, how long, how far, how safe,* etc.

= question word (+ object) + auxiliary verb + subject + main verb

What are different specialist areas of metrology?

How many countries does ISO coordinate?

When did the last Measuring Instruments Directive come into force?

3. Questions to the subject, which start with *what*, *who* or *which* question words. In this case, the word order is the same as in a positive sentence.

= question word (+ subject) + main verb

Who designed this graph?

Which device works better?

What is calibration?

What label indicates a certified instrument?

4. Questions to the object, which also start with *what*, *who*, but have a similar word order as in the general question.

= question word +auxiliary verb + subject + main verb + preposition

What does Scientific Metrology deal with?

What requirements do technical regulations for measuring instruments refer to?

What material is this object made of?

5. Alternative questions, which give several options to choose from with the help of *OR* conjunction that can be put in any part of the sentence to make the necessary alternative.

= (question word) +auxiliary verb + subject + main verb + object + OR + object

Does Metrology include units of measurements and their standards or weather phenomena and their conditions?

Do standards provide us with losses or benefits at an economical cost?

6. Disjunctive (tag) questions, which remind a statement with a tag at the end of it.

= subject + main verb, + tag (aux. verb+ subject in the form of pronoun)

You cannot help me to verify these data, can you?

Biomaterials have improved the quality of our lives, haven't they?

Comparators indicate the value of the small difference between the measured quantity and the measure having a value very near to it, don't they?

12. Сложное предложение: сложносочиненное и сложноподчиненное, типы придаточных предложений; бессоюзное подчинение

См. Кипнис И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю.Кипнис, С.А.Хоменко. – Минск: БНТУ, 2010. – 121 с.

С. 40-43.

13. Прямая и косвенная речь: правила перевода в косвенную речь предложений разных типов

См. Митрошкина, Т.В. Английский язык: полный курс подготовки к централизованному тестированию и экзамену / Т.В. Митрошкина. – Минск: Тетралит, 2013. – 512 с.

https://drive.google.com/file/d/0B46Mchya94h1cm9xaVNtakdCa1E/view?usp=sharing С. 189-195.

SEQUENCE OF TENSES. REPORTED SPEECH

При переводе прямой речи в косвенную необходимо соблюдать ряд правил:

► say to → tell

I say to him, "I am busy." → I tell him (that) I am busy.

► личные и притяжательные местоимения меняются соответственно смыслу:

Bill says, "I don't like your report on Metrology applications." → Bill says (that) he doesn't like my report on Metrology applications.

► Если глагол, вводящий косвенную речь, употреблен в одной из форм прошедшего времени *(Past Indefinite, Past Continuous, Past Perfect)*, то в придаточном предложении:

а. действует правило согласования времен:

Present Indefinite → Past Indefinite	*I do → I did*
Present Continuous → Past Continuous	*I am doing → I was doing*
Present Perfect → Past Perfect	*I have done → I had done*
Past Indefinite → Past Perfect	*I did → I had done*
Past Continuous → Past Perfect Continuous	*I was doing → I had been doing*
Future Indefinite → Future-in-the-Past	*I will do → I would do*

б. меняются указательные местоимения и наречия места и времени:

here → there	*yesterday → the day before (yesterday), the previous day*
this → that	*the last night → the night before, the previous night*
these → those	*two days ago → two days before, two days earlier*
now → then, right away, immediately	***tomorrow → the next day, the following day***
*today → **that day***	*next week → the next week, the following week*
tonight → that night	*in a month → a month later*

Jane said, "I am tired and want to go home now." → Jane said that she was tired and wanted to go home right away.

➢ ***Повелительное наклонение в косвенной речи:***

Команда, просьба в косвенной речи обычно выражается инфинитивным оборотом:

He said to me, "Remember to follow safety rules!" → He told me to follow safety rules.

The professor ordered, "Don't be late." → The professor ordered not to be late.

She said, "Let's test the ammeter." → She suggested testing the ammeter.

➢ ***Повествовательные предложения** в косвенной речи:*

Повествовательное предложение в косвенной речи обычно преобразуется в придаточное предложение, введенное союзом *that:*

The student said, "I carried out the experiment at the laboratory yesterday." → The student said that he had carried out the experiment at the laboratory the day before yesterday.

➢ ***Вопросительные предложения** в косвенной речи:*

В косвенном вопросе, в отличие от прямого вопроса, не происходит инверсии, то есть порядок слов такой же, как в обычном повествовательном предложении (подлежащее стоит перед сказуемым):

She asked me, "What are you doing?" (прямой вопрос) → *She asked me what I was doing* (косвенный вопрос).

Общий вопрос в косвенной речи вводится союзами *if* и *whether.*

The teacher enquired, "Is your homework done or not?" → The teacher enquired whether our homework was done or not.

Специальный вопрос в косвенной речи вводится тем же вопросительным словом, что и соответствующий прямой вопрос:

He asked, "Where do they, Paul?" → He asked Paul where they developed and improved instrumentation methods.

"How should I represent my research activity?" she asked me. → She asked me how to represent her research activity.

2 ПРАКТИЧЕСКИЙ РАЗДЕЛ

2.1 Перечень тем учебной дисциплины

1. Высшее техническое образование в Беларуси (Higher Engineering Education in Belarus).
2. Система образования. Типы учебных заведений в соизучаемых странах. Обучение в вузе (Higher Education in Great Britain).
3. Социально-познавательная деятельность: жизнь студента (рабочий день, виды учебных занятий, общественная деятельность, досуг) (The Belarusian National Technical University, My Faculty).
4. Выдающиеся представители науки и техники, их открытия
5. Социокультурные нормы делового общения
6. Введение в специальность, ее предмет и содержание. Общее представление о структуре и характере профессиональной деятельности специалиста (Measurement Systems, A Measuring Device, Micrometer).
7. Посещение предприятий, соответствующих выбранной специальности, с целью ознакомления с будущей профессиональной деятельностью студента (Applying for a Job, Organizations).
8. Типичные ситуации производственного общения (The Role of Standards, Measurement Standards, Eco-labelling).
9. Трудоустройство и карьера (Career in Engineering).
10. Реферирование и аннотирование статьи по специальности.

2.1.1 Материалы, рекомендуемые для использования на практических занятиях

1. Высшее техническое образование в Беларуси (Higher Engineering Education in Belarus)

См. Ваник, И.Ю. Методическое пособие по обучению устной речи для студентов технических вузов / И.Ю. Ваник, Е.Г. Ляхевич, О.А. Лапко, Н.В. Сурунтович. – Мн.: БНТУ, 2012. – 66 с.

С. 3-11.

2. **Система образования. Типы учебных заведений в соизучаемых странах. Обучение в вузе**
(Higher Education in Great Britain)

См. Ваник, И.Ю. Методическое пособие по обучению устной речи для студентов технических вузов / И.Ю. Ваник, Е.Г. Ляхевич, О.А. Лапко, Н.В. Сурунтович. – Мн.: БНТУ, 2012. – 66 с.
С. 11-20.

3. **Социально-познавательная деятельность: жизнь студента (рабочий день, виды учебных занятий, общественная деятельность, досуг)**
(The Belarusian National Technical University, My Faculty)

См. Ваник, И.Ю. Методическое пособие по обучению устной речи для студентов технических вузов / И.Ю. Ваник, Е.Г. Ляхевич, О.А. Лапко, Н.В. Сурунтович. – Мн.: БНТУ, 2012. – 66 с.
С. 21-33.

4. **Выдающиеся представители науки и техники, их открытия**

См. Сатинова, В.Ф. Британия и британцы / В.Ф. Сатинова. – Мн.: Выш. шк., 2004. – 334 с.

Britain's Science and Scientists

British contribution to science includes many great discoveries linked with famous names – Sir Isaac Newton (theory of gravitation), Robert Boyle ("the father of modern chemistry), Michael Faraday (whose discoveries gave rise to the electrical industry), and Henry Cavendish (properties of hydrogen). In the last century – J.J. Thomson, Lord Rutherford and Sir James Chadwick (basic work on nuclear science), Gowland Hopkins (the existence of bitamins), Sir William Bragg (X-ray analysis), and many others.

Medicine owes much to such pioneers as William Harvey (circulation of the blood), Edward Jenner (vaccination), Joseph Lister (anticeptics),

Sir Ronald Ross (who proved the relation between malaria and mosquitoes). British advances in medicine include penicillin and other antibiotics, heart-lung machines, a new anti-viral agent, interferon of great potential value, and many other important development in the treatment of disease.

The first pedal cycle was built by a Scottsman, Kirkpatric Macmillan, in 1839. Today Britain is the world's biggest exporter of cycles.

The first thermionic valve was patented in England in 1904 by Sir Ambrose Fleming, who could have forseen few of the consequences of his invention – radio broadcasting, television, radar navigational aids and communications satellites.

The British discovery of the multicavity magnetron in 1941 marked the beginning of modern radar, which played a major part in the second World War. Today over half the world's shipping carries British radar equipment.

Since 1945 there have been over 30 British scientists who have received international recognition for their work by gaining Nobel awards. There are more than 200 learned scientific societies in Britain.

Isaac Newton (1642–1727)

Newton, one of the greatest scientists of all time, was born on the 25th of December 1642 at the little village of Woolsthorpe in Lincolnshire, not far from the old university town of Cambridge. His father died before Newton was born. When Isaac was a schoolboy, he liked to make things with his own hands and once he made a primitive wooden clock.When he was fifteen, Newton's family wanted him to become a farmer like his father. He did his best but was a poor farmer and his uncle sent him back to school. At the age of 18 he was sent to Cambridge where he studied mathematics and took his degree at the age of 23, in 1665. Some years later he was appointed professor to the chair of physics and mathematics at Cambridge.

In 1665 the great plague broke out in England and the University was closed. Newton went home for a period of eighteen months. During that time, between the ages of 22 and 24 Newton made his great discoveries – the discovery of the differencial calculus of the nature of white light and the laws that govern the forces of gravitation.

In 1699 Newton was elected a foreign associate of the Academy of Sciences. He died at the age of 84 at Kensington on March 20, 1727.

James Maxwell (1831–1879)

James Clerk Maxwell, a remarkable physicist and mathematician of the 19th century, was born on November 13, 1831 in Edinburgh.

At school he became interested in mathematics and at the age of 14 he won a mathematical medal. While studying at the University of Edinburgh Maxwell attended meetings of the Royal Society, read a great number of books, made chemical, magnetic and other experiments. Two of his papers were published in the "Transactions". In 1850 Maxwell began his studies at Cambridge University. He took part in social and intellectual activities at the University. In 1854 he got the degree and for two years he stayed at Trinity College where he studied, lectured and did some experiments on optics.

In 1856 he became a professor of natural philosophy at Marischal College, Aberdeen, and in 1860 professor of physics and astronomy at King's College in London. He remained there for five years, which were the most productive for Maxwell. He continued his work on gases and the theory of electricity.

One of Maxwell's greatest works was "On the Physical Lines of Force", which was published in London. After 20 years of thought and experiments he published his famous "Treatise on Electricity and Magnetism".

In 1871 Maxwell was appointed professor of experimental physics in Cambridge. In 1876 his classic "Matter and Motion" appeared.

Maxwell died on November 5, 1879.

His contribution to the kinetic theory of gases, colour vision, the theory of heat, dynamics, and the mathematical theory of electricity are the best monuments to his great genius. His work also influenced the development to telephones and colour photography.

Ernest Rutherford (1871–1937)

Ernest Rutherford, a great English physicist, was born in 1871 in New Zealand. His grandparents were among the first English settlers on the Island.

When he was five, he was sent to primary school. Later at the University he revealed great abilities in physics. Rutherford was deeply interested in physical experiments. His work on "The Magnetisation of Iron by Highfrequency Discharges" was a great success. In 1895 he came to Cambridge and began to work at the laboratory led by professor Thom

son. Rutherford was among those scientists who started to work with X-rays after their discovery. Together with professor Thomson he found that the X-rays have positive and negative ions in the gas. For three years Rutherford worked at a research chair of physics at Montreal University. He studied the structure of the atom and the processes of radioactivity. In 1899 he discovered that radioactive radiation consists of three particles, which he called Alpha, Beta and Gamma rays.

The scientists all over the world were impressed by Rutherford's discoveries, and he was invited to many Universities both in the USA and Europe to lecture. Later he worked at Manchester University where he continued to study the structure of the atom.

In 1902 he explained the process of radioactive decay, in which one chemical element can turn into another. For this work Rutherford received the Nobel Prise in 1908. He was made a life peer in 1931. In 1937 Rutherford died. His research work is of great importance and is continued by many scientists all over the world.

Exercise 1. What are these British scientists famous for? Match the names of the scientists to their discoveries and inventions.

1. Isaac Newton	a) Alpha, Beta and Gamma rays
2. Henry Cavendish	b) the first thermionic valve
3. Gowland Hopkins	c) mathematical theory of electricity
4. Ernest Rutherford	d) relation between malaria and moquitoes
5. William Bragg	e) the basic law of electromagnetism
6. William Harvey	f) vaccination
7. Joseph Lister	g) a pedal cycle
8. Edward Jenner	h) theory of heat
9. Ronald Ross	i) theory of gravitation
10. Kirkpatric Macmillan	j) anticeptics
11. Ambrose Fleming	k) kinetic theory of gases
12. James Maxwell	l) existence of bitamins
13. Michael Faraday	m) properties of hydrogen
	n) circulation of blood
	o) X-ray analysis

Exercise 2. Provide laconic and precise answers to the following questions.

1. What name(s) of Britain's scientist(s) mentioned in the first text have you heard about before?
2. What was British contribution to the development of medicine?
3. What event marked the beginning of modern radar?
4. At what age did Newton make his great discoveries? What were they?
5. What were Maxwell's greatest works?
6. What can be considered as the best monuments to Maxwell's great genius?
7. In what branch of physics did Rutherford work? What were his discoveries?
8. For what work did he receive the Nobel Prize?

5. Социокультурные нормы делового общения

См. Hollett, V. Tech Talk / V. Hollett. – Oxford University Press, 2005. – 129 p.
https://drive.google.com/file/d/0B46Mchya94h1UW1RSGhZVTJrX1E/view?usp=sharing С. 4-7.

См. Learning to Talk Shop. Профессиональное общение на английском языке / С.В. Острейко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск, 2007. – 162 с.
https://drive.google.com/file/d/0B46Mchya94h1RDlxcE1qc0tMMUE/view?usp=sharing С. 5-10.

6. Введение в специальность, ее предмет и содержание. Общее представление о структуре и характере профессиональной деятельности специалиста

См. Английский язык для студентов технических вузов: основной курс. Basic English for Technical Students: учеб. пособие для вузов/ С.А. Хоменко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск: Вышэйшая школа, 2004. В 2 ч. – 494 с.
https://drive.google.com/open?id=0B4pdzVvK3--sUTdGN1h1akFZenM С. 25-31, 62-73.

См. Hollett, V. Tech Talk / V. Hollett. – Oxford University Press, 2005. – 129 p.

https://drive.google.com/file/d/0B46Mchya94h1UW1RSGhZVTJrX1E/view?usp=sharing C. 9-11.

Measurement Systems

Metric Units of Length

A. The *meter* (m) is the basic unit of length or distance in the metric system.

The door of your classroom is about 1 meter wide.

B. Three metric units used to measure smaller lengths or distances are the *millimeter* (mm), the *centimeter* (cm), the *decimeter* (dm).

1,000 mm = 100 cm = 10 dm = 1 m

A paper clip is about 3 cm long and 1 cm wide.

It is made of wire about 1 mm thick.

A paperback book is about 1 dm wide.

C. The *kilometer* (km) is the metric unit that is usually used to measure larger lengths or distances. Sometimes, the dekameter (dam) and hectometer (hm) are used.

1 km = 10 hm = 100 dam = 1,000 m

Mt. McKinley is about 6 km high.

A three-story building is about 1 dam high.

The distance around a baseball diamond is about 1 hm.

D. Each of the prefixes for metric units has a meaning.

kilo	hecto	deka	deci	centi	milli
thousand	hundred	ten	tenth	hundredth	thousandth
1,000 m	100 m	10 m	0.1 m	0.01 m	0.001 m

TRY THESE

Name some lengths or distances you would measure using:

1. meters 2. millimeters 3. centimeters 4. kilometers

SKILLS PRACTICE

Use m, mm, cm, dm, or km to complete.

1. The height of a room is about 3 _____ .
2. The length of a sofa is about 20 _____ .
3. The width of this book is about 20 _____ .
4. The width of a sharp pencil point is about 2 _____ .
5. The distance from Chicago to Dallas is about 1,500 _____ .

Match. Select the answer that seems reasonable.

6. length of a football field	a. 2 m
7. thickness of a quarter	b. 1 km
8. length of a pencil	c. 100 m
9. width of a chair	d. 2 mm
10. height of a basketball player	e. 4 dm
11. distance you can walk in 10 minutes	f. 15 cm

Measurements

Exercise 1. Check the meaning of the unknown words in the dictionary.

dimension	ounce
capacity	calipers
liquid	expansion
ground –up solids	contraction
flour	scale
gravel	balances

Exercise 2. Read the text to find out what measuring devices exist.

A Measuring Device

A measuring device is a mechanism designed to find the dimensions, capacity or amount of something. Measuring devices can be divided into groups in several ways. For example, they can be divived according to the nature of things they are designed to measure; or they can be divided accvording to the type of measuring unit each device uses, or in any number of other ways.

If they are grouped according to the nature of the things they are designed to measure, we might have some devices for measuring liquids, some for measuring ground-up solids (such as flour, gravel, chemicals in powdered form etc.) and some for measuring requiring linear measurement (such as measurement for dimensions). Many other possible types of things and their devices could be included: the three are mentioned only as a sampler.

If we group measuring devices according to the type of measuring unit each uses, we might have the following types: linear units (feet, centimeters, inches, miles, metres, etc), weight units (grams, ounces, pounds etc.) and the units used for more specialized things, such as electric current and temperature (amps, degrees centigrade etc.).

Some examples of devices that use different types of measuring units are rulers, calipers and measuring tapes – all of which measure linear dimensions: balances –the most common being spring and beam balances – for measuring weight; and containers such as graduated glass cylinders found in chemistry laboratories, and the measuring cups and measuring spoons found in kitchens – all used for measuring volume.

A common example of a measuring instrument (device) used to measure more specialized things is a thermometer, which measures temperature. Typical household thermometers are those containing alcohol ar mercury. These instruments measure temperature quite differently from the way a ruler measures linear dimensions, for example. The ruler measures directly, the thermometer actually measures the expansion or contraction of the liquid inside it, and this is shown on a scale that is marked in units representing temperature.

Exercise 3. Say if the following statements are true or false acoording to the information in the text.

1. Measuring devices can be divided into several groups according to the nature of things they are desighed to measure or to the type of of measuring unit each devise uses.
2. I we group measuring devices according to the nature of the things they are designed to measure we might have devices for measuring liquids and ground-up solids only.
3. Having grouped measuring devices according to the type of measuring units each uses we may have linear units, volumetric units,

weight units and others.

4. Measuring cups and measuring spoons found in kitchens are used for measuring weight, while balances are used for measuring volume.

5. Typical household thermometers are those containing either alcohol or mercury.

6. Thermometres measure temperature the same way a ruler measures linear dimensions.

Exercise 4. Choose the right continuation to the sentences.

1. Measuring devices	a. measures directly.
2. Some examples of devices that use different types of measuring units	b. can be divided according to the nature of things they are designed to measure.
3. A measuring device	c. are rulers, calipers and measuring tapes.
4. A common example of a measuring device used to measure temperature	d. those containing either alcohol or mercury.
5. Typical household thermometers are	e. actually measures the expansion or contraction of the liquid inside it.
6. A thermometer	f. is a thermometer.
7. The ruler	g. is a mechanism designed to find the dimensions, capacity, amount of something.

Exercise 5. Look through the text again. Choose one of the options to the meaning of the underlined words.

1. A measuring device is a mechanism designed <u>to find out</u> the dimensions, capacity or amount of something.

a) to set up
b) to establish
c) to install
d) to determine

2. Measuring devices can be divided according to the nature of the things they are designed to measure.

a) origin
b) character
c) birth
d) type

3. A common example of a measuring instrument used to measure more specified things is a thermometer.

a) arrangement
b) mechanism
c) construction
d) device

4. A common example of a measuring instrument is a ruler.

a) typical
b) general
c) original
d) actual

5. Household thermometers are those containing either alcohol or mercury.

a) economical
b) family
c) standard
d) ordinary

Exercise 6. There is a mistake in each of the sentences. Find and correct it.

1. A measuring device are a mechanism designed to find the dimensions, capacity or amount of something.
2. Measuring devices are divided on groups in several ways.
3. A common example of a measuring instruments used to measure length is a ruler.
4. This instruments measure weight.
5. Typical household thermometers are that containing alcohol ar mercury.
6. We may have some devices for measure volume.

Exercise 7. Make a short summary of the text.

Micrometer

Activity 1: Awareness Raising

a. Working in pairs, list four mechanical devices you have studied in class.

b. For each device, identify its various uses.

c. For each device, identify its constituent components.

Activity 2: Reading

Read the passage below carefully.

The micrometer

A micrometer is an instrument which is used for measuring small distances precisely. It can measure with a precision of 0.01mm. A micrometer consists of a steel frame in the shape of a semi-circle. Attached to one end of this semi-circular frame is a small anvil. The other end of the frame extends outwards. A piece of metal in the shape of a cylinder fits on this extension. The cylindrical part is called the barrel or sleeve. Inside the barrel is a screw-thread.

Connected to the spindle is another cylindrical piece of metal called the thimble which fits over the barrel. Attached to the end of the thimble is a ratchet, which turns the spindle. Most micrometers have a lock knot, or locking ring, so that the spindle can be locked in any position. Measurements are taken between the anvil and the end of the spindle. They are read off from numbers which are marked on the barrel and on the spindle.

Activity 3: Analyzing Language

When you have finished reading, look at the passage again. We will examine the passage to determine how information is organized from one sentence to the other.

Writers link sentences by combining information that they think their readers already know with new information. Let's call the part of the sentence which carries information that the reader already knows GIVEN information, and the part that adds something new as NEW information.

Now, let's see what pattern the given and new information show in the passage you have just read.

	GIVEN	NEW
This information was Given in the title	{1. *A Micrometer*	is an instrument which is used for measuring small distances precisely.
	GIVEN	NEW
"It can measure" refers to information given in sentence 1.	{2. *It can measure*	with a precision of 0.01 mm.
	GIVEN	NEW
"A micrometer" is information given in sentences 1 and 2.	{3. *A Micrometer*	consists of a steel frame in the shape of a semi-circle.
	GIVEN	NEW
The reference to the semi-circular frame is given in sentence 3.	{4. Attached to one end of this semi-circular frame	is a small anvil.
	GIVEN	NEW
The frame refers to the frame mentioned in sentences 3 and 4.	{5. The other end of th frame	extends outwards.

As we can see from the first four sentences in our passage, given information occurs at the beginning of the sentence while new information occurs towards the end of the sentence.

However, sometimes this movement from given to new information may be disrupted. Look at sentence 6. You will notice that it follows the New-Given pattern as shown below.

NEW	GIVEN	
6. A piece of metal in the shape of cylinder	*fits on to this extension*.	} "This extension refers to the verb phrase of sentence 5.

	GIVEN	NEW
Reference to the cylindrical part is now GIVEN information	{7. *The cylindrical part*	is called the barrel or sleeve.
	GIVEN	NEW
Reference to the barrel is now GIVEN information	{8. *Inside the barrel*	is a screw thread.

Now look at paragraph 2. Working in pairs, identify Given and New information for each sentence. Explain why you think the information is given or new.

Activity 4: Applying the Pattern

Using one of the mechanical devices you identified in activity 1, describe the device in six sentences. Organize the information in each sentence using the Given-New information pattern.

7. Посещение предприятий, соответствующих выбранной специальности, с целью ознакомления с будущей профессиональной деятельностью студента

(Applying for a Job, Organizations)

См. Learning to Talk Shop. Профессиональное общение на английском языке / С.В. Острейко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск, 2007. – 162 с.

https://drive.google.com/file/d/0B46Mchya94h1RDIxcE1qc0tMMUE/view?usp=sharing С. 11-23, 24-37.

8. **Типичные ситуации производственного общения**

The Role of Standards

Active Vocabulary:

benefit (v)
conform (V)
conformity assessment
consumer (n)
contribution (n)
enormous (adj)
interchangeability (n)
legislation (n)
purchaser (n)
quality (n)
repercussion (n)
standard (n)
to be unaware of smth.
to meet smb's expectations

TEXT

What if standards did not exist?

If there were no standards, we would soon notice. Standards make an enormous contribution to most aspects of our lives - although very often, that contribution is invisible. It is when there is an absence of standards that their importance is brought home. For example, as purchasers or users of products, we soon notice when they turn out to be of poor quality, do not fit, are incompatible with equipment we already have, are unreliable or dangerous. When products meet our expectations, we tend to take this for granted. We are usually unaware of the role played by standards in raising levels of quality, safety, reliability, efficiency and interchangeability - as well as in providing such benefits at an economical cost.

ISO (International Organization for Standardization) is the world's largest developer of standards. Although ISO's principal activity is the development of technical standards, ISO standards also have important economic and social repercussions. ISO standards make a positive difference, not just to engineers and manufacturers for whom they solve basic problems in production and distribution, but to society as a whole.

The International Standards which ISO develops are very useful. They are useful to industrial and business organizations of all types, to governments and other regulatory bodies, to trade officials, to

conformity assessment professionals, to suppliers and customers of products and services in both public and private sectors, and, ultimately, to people in general in their roles as consumers and end users.

ISO standards contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner. They make trade between countries easier and fairer. They provide governments with a technical base for health, safety and environmental legislation. They aid in transferring technology to developing countries. ISO standards also serve to safeguard consumers, and users in general, of products and services - as well as to make their lives simpler.

When things go well - for example, when systems, machinery and devices work well and safely - then often it is becausc they conform to standards. And the organization responsible for many thousands of the standards which benefit society worldwide is ISO.

WORD STUDY

Exercise 1. Match the words with their definition.

1. Standard	a. the quality of being capable of exchange or interchange
2. Conformity assessment	b. the law enacted by a legislative body or the act of making or enacting laws
3. Interchangeability	c. a degree or grade of excellence or worth
4. Quality	d. any definite rule, principle or measure established by authority
5. Legislation	e. any activity concerned with determining directly or indirectly that requirements are fulfilled

Exercise 2. Match the synonyms.

1. repercussions	a. to be of profit
2. enormous	b. effective
3. to turn out	c. to fit in
4. to safeguard	d. hope
5. principal	e. not known
6. expectation	f. to protect

7. unaware	g. main
8. to conform	h. to happen
9. to benefit	i. results (effects)
10. efficient	j. large

Exercise 3. Match the antonyms.

1. purchaser	a. small
2. public	b. producer
3. to be of poor quality	c. to know
4. unreliable	d. negative
5. to be unaware	e. to be of high quality
6. positive	f. reliable
7. enormous	g. seller
8. consumer	h. private

Exercise 4. Form nouns from the following verbs.

to contribute	to develop	to distribute
to purchase	to produce	to supply
to use	to conform	to consume

Exercise 5. Complete the sentences using the words from vocabulary box.

1. The company should strive _____ of its customers and continually improve the effectiveness of its _____ management system. (or to improve the _____ of its products).
2. If the management frequently accepts compromises it may have senous long-term _____ .
3_____ give specifications or requirements for products, services, systems, processes and are the key _____ to the development of the global market.
4. Requirements for sale of pre-packed goods are the part of national _____ in many countries.
5. ISO standards make an _____ to society as a whole.

READING COMPREHENSION

Exercise 1. Answer the following questions.

1. Do standards make an enormous contribution to most aspects of our lives?
2. When do we notice the importance of standards?
3. What is ISO's principal activity?
4. Standards make trade between countries easier and fairer, don't they?
5. Why are standards useful to governments?

Exercise 2. Say whether the statements are true or false.

1. The contribution of standards to society is invisible.
2. Standards raise levels of quality, safety, reliability, efficicncy and intcrchangeability.
3. ISO is one of the world's largest developer of standards.
4. ISO standards solve basic problems in production and distribution for engineers and manufactures.
5. ISO standards facilitate trade between countries.

Exercise 3. Choose the best continuation to the following sentences from the text.

1. If there were no standards _____
a) we would take this for granted.
b) we would soon notice.
c) we wouldn't notice.
2. When products meet our expectations _____
a) we tend to take this for granted.
b) we are usually unaware of it.
c) we consider them to be of high quality.
3. ISO is _____
a) the world's largest developer of standards.
b) the institute of International standards.
c) the International organization of technical standards.

4. The International standards which ISO develops _____

a) are necessary only for industrial and business organizations of all types.

b) are very useful to suppliers of products and services.

c) are very useful.

5. When system and devices work well and safety, then it is because _____

a) they are incompatible with standards.

b) they conform to standards.

c) they turn out to be of poor quality.

Exercise 4. Which of the following expresses the main idea of article best of all?

1. ISO is the world's largest developer of technical standards.
2. ISO standards make our lives simpler.
3. We are usually unaware of the role played by standards in our lives.
4. Standards make an enormous contribution to most aspects of our lives.
5. ISO standards benefit society worldwide.

Exercise 5. **Make the summary of the text using the following clichés.**

1. The text is devoted to ….. .
2. The author pays special attention to ….. .
3. The main points discussed in the article are ….. .

SPEAKING

Exercise 1. Look through the following word combinations and **say which of them you didn't encounter in the text.**

— to make an enormous contribution;
— to turn out;
— to take sth for granted;
— to have important repercussions, to be (un)aware of sth;
— to succeed in sth;
— to benefit society.

Think of the situations in which you can use each word combination. Choose the best situation and get ready to present it to the group.

Exercise 2. Based on the text make up a story about the role standards play in our life. Say if their importance really so great or it is overestimated.

Measurement Standards

• Can measurement standards make our life easier?

• Read the text below to find out how different kinds of standards can contribute to the measurement procedure.

The word "standard" is used with two different meanings: as a widely adopted specification, technical recommendation or similar document (in French, "norme"); and also as a measurement standard (in French, "étalon"). The qualifier "measurement" should therefore be used to avoid misunderstandings.

A measurement standard can be a physical measure, measuring instrument, reference material or measuring system intended to define, realize, conserve or reproduce a unit or one or more values of a quantity to serve as a reference.

There is a hierarchy of measurement standards.

International measurement standards

Standard recognized by an international agreement to serve internationally as the basis for assigning values to other standards of the quantity concerned.

The custodian of international measurement standards is the BIPM (International Bureau of Weights and Measures) in Sèvres near Paris. The oldest standard in use is the kilogram prototype.

National measurement standards

Standard recognized by national law to serve, in a country, as the basis for assigning values to other standards of the quantity concerned.

The custodian of national measurement standards is usually a national laboratory called the National Metrology Institute, National Bureau of Standards or National Bureau of Weights and Measures. Some countries do not have national measurement standards.

Primary standards

Standard that is designated or widely acknowledged as having the highest metrological qualities and whose value is accepted without reference to other standards of the same quantity.

Primary standards are, for example, Josephson devices for the realization of the quantity "volt," or stabilized lasers with interferometers for the realization of the quantity "length". These devices are used as national standards by many National Metrology Institutes and some of the best-equipped calibration laboratories.

Secondary standards

Standard whose value is assigned by comparison to a primary standard of the same quantity. Primary standards are usually used to calibrate secondary standards.

Working standards

Standard that is used routinely to calibrate or check material measures, measuring instruments, or reference materials.

A working standard is usually calibrated against a secondary standard. A working standard used routinely to ensure that measurements are being carried out correctly is called a "check standard". There is no general requirement as far as the accuracy of standards is concerned. A working standard in one location may be good enough to serve as the reference standard or even as a national standard in another. The accuracy of some measuring instruments used in industry is so high that primary standards are necessary for calibration.

Reference standards

Standard generally having the highest metrological quality available at a given location or in a given organization, from which the measurements made at that location are derived.

Calibration laboratories maintain reference standards for calibrating their working standards.

Transfer standards

Standard used as an intermediary to compare standards.

Resistors are used as transfer standards for comparisons of voltage standards, weights are used to compare balances.

Travelling standard

Standard, sometimes of special construction, intended for transport between different locations, and used for inter-comparison of standards.

A portable battery-operated cesium frequency standard may be used as a travelling standard. Calibrated load cells are used as travelling force standards.

EXERCISES

Exercise 1. Give detailed answers to the following questions.

1. What does the word "standard" mean?
2. What is a measurement standard?
3. What types of measurement standards do you know?
4. What is the custodian of international measurement standards?
5. How does an international measurement standard work?
6. Why don't any countries have national measurement standards?
7. What is the difference between primary and secondary standards?
8. What is a working standard used for?
9. Why is it called a "check standard"?
10. What do calibration laboratories maintain for calibrating their working standards?
11. What is used to compare standards?
12. What is the example of travelling force standards?
13. What are seven basic measurement units in the SI system?

Exercise 2. Match the pairs of synonyms.

1. recommendation	a) acknowledge
2. document	b) dimension
3. recognize	c) ascribe
4. agreement	d) precision
5. derive	e) gauge
6. assign	f) advice
7. custodian	g) the same
8. measuring instrument	h) covenant
9. calibrate	i) graduate
10. measurement	j) paper
11. carry out	k) guard
12. accuracy	l) perform
13. similar	m) obtain

Exercise 3. Make up word combinations from two columns and give their Russian equivalents.

1. measurement	a) of a quantity
2. reference	b) laboratory
3. measuring	c) material
4. value	d) agreement
5. international	e)quality
6. national	f) standard
7. metrological	g) measure
8. calibration	h) law
9. material	i) instrument

Exercise 4. Fill in the gaps with the appropriate words. Render the passage into Russian.

definition instruments value standard measurement calibration define quantity dimension units store conditions basis

_____[1] *standards* are those devices, artifacts, procedures, _____[2], systems, protocols, or processes that are used to _____[3] (or to realize) measurement _____[4] and on which all lower echelon (less accurate) measurements depend. A measurement _____[5] may also be said to _____[6], embody, or otherwise provide a physical _____[7] that serves as the _____[8] for the measurement of the quantity. Another _____[9] of a standard is the physical embodiment of a measurement unit, by which its assigned _____[10] is defined, and to which it can be compared for _____[11] purposes. In general, it is not independent of physical environmental _____[12], and it is a true embodiment of the unit only under specified conditions. Another definition of a standard is a unit of known quantity or _____[13] to which other measurement units can be compared.

Exercise 5. Read the sentences, translate them into Russian and define the Infinitive functions.

1. Many early standards were based on the human body: the length

of man's hand, the width of his thumb, the distance between outstretched fingertips, the length of one's foot, a certain number of paces, etc. In the beginning, while groups were small, such standards were convenient and uniform enough to serve as the basis for measurements.

2. The logical person to impose a single standard was the ruler of the country — hence, our own 12-inch or other short measuring stick is still called a *ruler.*

3. We must make measurements, and we must know how accurately (or, to be more correct, with what uncertainty) we made those measurements. In order to know that, there must be standards.

4. The earliest standards were based on the human body, and then attempts were made to base them on "natural" phenomena.

5. Since the second is maintained by atomic clocks it is necessary to add "leap seconds" periodically so that the solar day does not gradually change with respect to the time used every day.

6. Protocol standards can be defined as documents describing the operations and processes that must be performed in order for a particular end to be achieved.

7. Standards of practice are called a "protocol" by Europeans to avoid confusion with a physical standard.

8. For example, buyers of fuel oil are charged by a unit of liquid volume. In the U.S., this would be the gallon; but in most other parts of the world, it would be the liter. It is important for the buyer that the quantity ordered is actually received and the refiner expects to be paid for the quantity shipped. Both parties are interested in accurate measurements of the volume and, therefore, need to agree on the units, conditions, and method(s) of measurement to be used.

9. Persons needing to measure a mass cannot borrow the primary standard maintained in France or even the national standard from the National Institute of Standards and Technology (NIST) in the U.S. They must use lower-level standards that can be checked against those national or international standards.

10. Everyday measuring devices, such as scales and balances, can be checked (calibrated) against working level mass standards from time to time to verify their accuracy.

Exercise 6. Expand the following ideas using information from the text:

1. There are two different meanings of the word "standard".
2. A measurement standard is reference material.
3. There are eight main measurement standards.
4. Some countries don't have national measurement standards.
5. Primary standards have the highest metrological qualities.
6. A working standard is usually calibrated against a secondary one.
7. A working standard in one location may be good enough to serve as the reference standard or even as a national standard in another.

Exercise 7. Do you think the importance of standards is exaggerated? Speak on their role in your life using the following phrases.

It's common knowledge …
It's obvious that …
It goes without saying that …
Personally I believe …
As I see it …
I totally share the idea …

Exercise 8. Read the text and translate it in writing.

A Conceptual Basis of Measurements

Lord Kelvin's oft-quoted statement may bear repeating here:

I often say that when you can measure what you are speaking about, and can express it in numbers, you know something about it; but when you cannot measure it, cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind; it may be the beginnings of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science, whatever the matter may be. So therefore, if science is measurement, then without metrology there can be no science.

William Thomson (Lord Kelvin), May 6, 1886

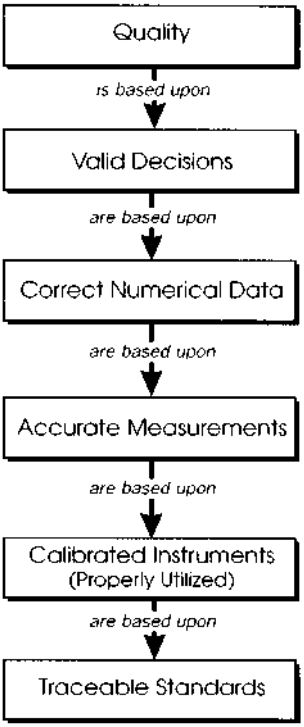


Figure 1

Lord Kelvin's statement has been quoted so many times that it has almost become trite, but looking at Figure 1 will show an interesting hierarchy. In order to achieve quality or "to do things right," it is necessary to make some decisions. The correct decisions cannot be made unless there are good numerical data on which to base those decisions. Those numerical data, in turn, must come from measurements and if "correct" decisions are really needed, they must be based on the "right" numbers. The only way to get "good" numerical data is to make accurate measurements using calibrated instruments that have been properly utilized. Finally, if it is important to compare those measurements to other measurements made at other places and other times, the instruments must be calibrated using traceable standards.

Do you share the opinion of the author of this quote? How will we live without metrology?

Eco-labelling

- Have you ever heard of eco-labelling? Is it used in your country?
- Read the text below to find out what eco-labelling schemes exist.

Eco-labelling is sometimes also called environmental labelling. By choosing a product with an eco-label, the consumer makes a deliberate and informed choice to purchase a product or a service that causes less damage to the environment than another similar product or service. It does not mean that the product has no negative influence on the environment, but it does mean that it is appreciably better than "just another" product or service. Eco-labelling is therefore different from the setting of minimum product standards or requirements.

Eco-labelling can be broadly classified as either first-party, or third-party certified. First party, or "self declaration of conformity" is performed by the suppliers themselves to promote the positive social or environmental aspects of their products. Third-party certification is carried out by independent or governmental organizations, having no financial interest in the product. These organizations evaluate the products or services according to a set of publicly defined criteria.

You will find eco-labelling schemes all round the world. It has a long history especially in Europe with Germany's "Blue Angel" environmental label that has been available since 1978. This is not its official name, which is "Environmental Label", but the specific product mark resembles a blue angel, hence it became known under that name. More than 30 countries at the last count run such schemes. These schemes deal with a vast number of products ranging from air conditioning, automotive industry, housing, dairy products, paints, paper products to windows and doors, and many more.

The Global Eco-labelling Network (GEN) was founded in 1994 to improve, promote and develop the eco-labelling of products and services. Currently, the members of GEN include 14 eco-labelling organizations from Europe, Asia, and North and South America, including major organizations such as Green Seal of the USA and Blue Angel of Germany. Some of their activities include the collection and provision of information on eco-labelling programmes, participation in eco-labelling

activities of UNEP (the United Nations Environment Programme), ISO (International Organization for Standardization), and WTO (the World Trade Organization). They also explore mutual recognition programmes and provide a mechanism for information exchange.

ISO (the International Organization for Standardization) has also published a number of international standards dealing with eco-labelling in the well-known ISO 14000 series. These standards are fairly new, but will be used more and more in the near future by certification organizations and industry.

EXERCISES

Exercise 1. Answer the following questions.

1) What is eco-labelling?
2) What is first-party certification? How is it different from third-party certification?
3) What is "Blue Angel"?
4) There are different labeling schemes, aren't there? What products do they deal with?
5) Why was The Global Eco-labelling Network founded?
6) What is the role of ISO in promoting eco-labelling schemes?

Exercise 2. Agree or disagee with the following ideas from the text.

- A product or a service with an eco-label causes no damage to the environment.
- Eco-labelling is different from the setting of minimum product standards or requirements.
- Eco-labelling can be broadly classified as either first-party or second-party certified.
- "Blue Angel" is an eco-label that has a long history in the USA.
- The Global Eco-labelling Network was founded to promote and develop the eco-labelling of products and services.
- The International Organization for Standardization is the largest certification organization in the world.
- The well-known ISO 14000 series standards deal with eco-labelling.
- Eco-labelling schemes are used only with regard to products.

Exercise 3. Make the summary of the text using the following **clichés.**

1. The text is devoted to ….. .
2. The author pays special attention to ….. .
3. The main points discussed in the article are ….. .

Exercise 4. Match the synonyms.

1. comsumer	a) harm
2. buy	b) to assess
3. damage	c) to help to organize
4. declare	d) to perform
5. influence	e) supply
6. currently	f) agreement
7. evaluate	g) to purchase
8 provision	h) now
9. resemble	j) to be similar to
10. promote	k) effect
11.conformity	l) to claim
12. carry out	m) customer

Exercise 5. Make up word combinations from two columns and give their Russian equivalents.

1.eco-labelling	a) labelling
2. third-party	b) criteria
3. environmental	c) network
4. deliberate	d) recognition
5. defined	e) exchange
6. global	f) certification
7. mutual	g) choice
8. information	h) organizations
9. certification	i) activity

Exercise 6. Speak on the importance of eco-labelling. You may begin like this:

It's common knowledge that ecological problems are paid much attention to. In order to be competitive manufacturers should introduce eco-labelling schemes all round the world ….

Exercise 7. Read the text and translate it in writing.

Eco-labels and Green Stickers are labeling systems for food and consumer products. Ecolabels are voluntary, but green stickers are mandated by law; for example, in North America major appliances and automobiles use Energy Star. They are a form of sustainability measurement directed at consumers, intended to make it easy to take environmental concerns into account when shopping. Some labels quantify pollution or energy consumption by way of index scores or units of measurement, while others assert compliance with a set of practices or minimum requirements for sustainability or reduction of harm to the environment. Many ecolabels are focused on minimising the negative ecological impacts of primary production or resource extraction in a given sector or commodity through a set of good practices that are captured in a sustainability standard. Through a verification process, usually referred to as "certification", a farm, forest, fishery.

The last few years have seen two key trends in the ecolabels space. There is an explosion in the numbers of different ecolabelling programs across the world and across business sectors and secondly the proliferation of umbrella labeling programs.

Ecolabelling systems exist for both food and consumer products. Both systems were started by NGOs, since then the European Union have developed legislation for conduct of ecolabelling and also have created their own ecolabels, one for food and one for consumer products. At least for food, the ecolabel is nearly identical with the common NGO definition of the rules for ecolabelling. Label trust is an issue for consumers because as manufacturers and manufacturing associations have set up "rubber stamp" labels to greenwash their products with fake ecolabels. High trust levels can be created when ecolabels apply for Governmental recognition as formal Certification Marks [recognized by

logos or names with 'CTM', CM or 'CertTM']. Typically this means schemes

approved as a Certification Mark, have had the Government Department responsible declare that the scheme has a standard and certifies that they are 'Competent to Certify'. The highest trust levels would be a government recognized certification mark that was also compliant with key ISO standards especially ISO 14024- Type 1 Ecolabels that undertake ISO 14040 compliant life cycle analysis as part of their assessment.

9. Трудоустройство и карьера

См. Learning to Talk Shop. Профессиональное общение на английском языке / С.В. Острейко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск, 2007. – 162 с.

https://drive.google.com/file/d/0B46Mchya94h1RDlxcE1qc0tMMUE/view?usp=sharing С. 1-5.

10. Реферирование и аннотирование статьи по специальности

См. Хоменко, С.А. Reading, Speaking, Writing = Читаем, Говорим, Пишем. Пособие по английскому языку для аспирантов, магистрантов и студентов технических специальностей / С. А. Хоменко, В. Ф. Скалабан, С.П. Личевская. – Минск: БНТУ, 2007. – 175 с.

PRECIS AND ANNOTATION WRITING

Реферирование используется как прием обучения смысловой компрессии текста, так и средство переработки и фиксирования извлеченной из иностранных источников информации.

Процесс реферирования включает в себя несколько этапов: 1) ознакомление и осмысление текста-оригинала и выделение в нем ключевых фрагментов; 2) определение логической схемы текста, составление плана и обобщение всей информации в несколько основных смысловых вех; 3) сжатие информации до формы искомого реферата(реферата-конспекта, реферата-резюме, обзорного реферата и т.д.)

Реферат представляет собой вторичный информационный документ, содержащий сжатое изложение основной информации первоисточника по схеме: задачи – методы ее решения – ее результаты.

Текст реферата строится на материале ключевых фрагментов, заимствованных из текста-оригинала, а также обобщения материала своими словами, в нем не уместны какие-либо оценочные элементы.

Логическая последовательность в изложениях может быть сходной с оригиналом, или отличаться от него. В текст реферата могут быть введены специальные связочные средства и переходные элементы, которые указывают на логические отношения и помогают связать отдельные высказывания в единое целое, например:

therefore, thus, besides, in addition to, as for, moreover, hence.

Степень сжатия текста при составлении реферата различная. При незначительном объеме реферата можно составить реферат, в котором число предложении будет соответствовать числу абзацев первоначального текста.

Последовательность работы при составлении реферата сводиться к следующей:

1) определение основной темы текста;

2) внимательное чтение текста, анализ смысловых связей и определение

логико-смысловой структуры текста;

3) выделение ключевых фрагментов в каждом абзаце и составление лексико-тематических цепочек;

4) определение подтем текста и составление логического плана текста;

5) обобщение (в случае отсутствия) главного содержания абзаца (абзацев) своими словами;

6) анализ ключевых фрагментов, собственных обобщении и распределение их в качестве тезисов по пунктам логического плана;

7) составление реферата на материале логического плана и развивающих его тезисов, используя переходные элементы и связочные средства.

Аннотирование представляет собой сложный вид компрессии текста и используется как способ фиксирования информации в предельно краткой форме.

В тексте аннотации главное содержание первоисточника излагается своими словами, которые представляют собой высокую степень абстрагирования и обобщения смысла оригинала. Язык аннотации имеет свою ярко выраженную специфику и характеризуется:

а) использование клишированных выражений :

the text deals with… ; the text is about … ; the author comes to the conclusion…; the author emphasizes the idea…;

б) наличием оценочных элементов:

a vital problem is discussed; an important conclusion about… is emphasizes;

в) минимальным использованием языка оригинала, которое фактически сводится к ключевым тематическим словам;

г) использованием пассивных конструкции :

the theory is discussed; the model was used…;

д) использованием безличных предложений:

it is reported that …, it is believed that…; it is supposed that… .

Аннотация состоит, как правило, из 3-4 предложений, отражающих основную тему текста, ключевые моменты текста и вывод, к которому приходит автор.

Ниже приводятся образцы реферата и аннотации текста ‘What Is Metrology?’.

WHAT IS METROLOGY?

Metrology is the science of measurement. It should not be confused with "Meteorology", the science of weather and weather forecasting. Metrology includes units of measurement and their standards, measuring instruments and their field of application, and all theoretical and practical problems relating to measurement.

Measurements are essential to nearly all aspects of human activity ranging from production control, measurement of environmental quality, health and safety assessment, conformity assessment of products to consumer protection and fair trade assurance.

Metrology is classified in three main fields: Scientific Metrology, Industrial Metrology and Legal Metrology.

Scientific Metrology is that part of metrology which deals with problems common to all metrological questions irrespective of the quantity measured. It covers general theoretical and practical problems concerning units of measurement, including their realization and dissemination through scientific methods, the problems of errors and uncertainties in

measurement and the problems of metrological properties of measuring instruments.

There are different specialist areas of metrology, for example:

- *Mass metrology* dealing with mass measurements;
- *Dimensional metrology* dealing with length and angle measurements;
- *Temperature metrology* dealing with temperature measurements;
- *Electrical metrology* dealing with electrical measurements;
- *Chemical metrology* dealing with measurements in chemistry.

Industrial metrology deals with measurements in production and quality control. It covers calibration procedures, calibration intervals, control of measurement processes and management of measuring instruments in indus try to ensure that they are in a state of compliance with requirements for their intended use.

Legal metrology is that part of metrology which is subject to legal/regulatory control. It is defined in the *International Vocabulary of Legal Metrology* as that part of metrology relating to activities which result from statutory requirements and concern measurement, units of measurement, measuring instruments and methods of measurement and which are performed by competent bodies.

Precis

Author, Journal, Volume, No, pp.

Metrology is the science of measurement. It includes units of measurement and their standards, measuring instruments and their field of application, and all theoretical and practical problems relating to measurement. Metrology is classified in three main fields: Scientific Metrology, Industrial Metrology and Legal Metrology.

Scientific Metrology is that part of metrology which deals with problems common to all metrological questions irrespective of the quantity measured. There are different specialist areas of metrology, for example: mass metrology;dimensional metrology; temperature metrology;electrical metrology; chemical metrology.

Industrial metrology deals with measurements in production and quality control.

Legal metrology is that part of metrology which is subject to legal/regulatory control.

Annotaion

Author, Journal, Volume, No, pp.

The definition of metrology, its classification into different fields is given. Specialist areas of metrology are enumerated.

3. РАЗДЕЛ КОНТРОЛЯ ЗНАНИЙ

3.1 Тесты для промежуточного и итогового контроля

Time: 45 min
Total Score: 50 points

Intrermediate Lexical-Grammar Test
(Term 1. "Basic English for Technical Students". Part 1)
Test 1

I. Fill in the gaps using the proper preposition.

1. I'm good … English
2. He is interested … the history of Metrology.
3. This is a tool ... driving in nails.
4. Take an electric drill and switch it ... . Then drill a hole.
5. ... the left of the door there is a toolbox.
6. These alloys are widely used ... making pipes.
7. We remove nails ... tyres ... the help of pliers.
8. The beaker is full ... liquid.

II. Complete these sentences with *much, many, little/a little; few/a few.*

1. The workshop is almost empty. There are very ... people there.
2. Do you speak German well? – No, only ... words.
3. Tom is very busy. He has so ... work to do.
4. Are there any tools in the workshop? – Yes, but not … .
5. Measure as … objects as possible.
6. We have to hurry. We haven't got ... time.
7. They have got too … time for experiment.
8. There is ... cement in the sack. We need some more.

III. Form nouns from the following adjectives.

1.	strong –	5.	flexible –
2.	safe –	6.	soft –
3.	high –	7.	accurate –
4.	circular –	8.	wide –

IV. Correct mistakes in the given sentences.

1. How are you do? – I'm excellent, thanks.
2. What is he? – He is Petrov, my groupmate.
3. There are a file, a chisel and a spanner on the shelf.
4. Is this metal box more heavy than that one?
5. I wonder what is this tool made of?
6. Copper is harder then aluminium.
7. What is these called?
8. Metal is more stronger than plastic.

V. Put questions to these sentences.

1. It is impossible to live without standards. *(a general question)*
2. Steel, copper and aluminium are widely used in engineering. *(an alternative question)*
3. The alloy of copper and zinc is known as brass. (*a general question)*
4. This gauge has a scale and a pointer. *(an special question)*
5. This hammer is made of wood and steel. *(a disjunctive question)*
6. There are different types of tools in the toolbox. *(a disjunctive question)*
7. We transport people and goods with the help of a car. *(a special question)*
8. A manometer is an instrument for measuring pressure. *(a special question)*

VI. Translate the following sentences into English.

1. Он – студент второго курса дневного отделения.
2. Кстати, существуют различные виды полупроводников.
3. Если мне не изменяет память, стальные трубы самые тяжелые и наименее гибкие.
4. Насколько мне известно, этот сплав обладает коррозийной устойчивостью.
5. Я полагаю, этот станок используется для обработки деталей.
6. Мне кажется, этот амперметр неисправен.
7. Без сомнения, метрология – точная наука.

8. Послушай, Алексей, я хочу знать, надежен ли этот измерительный прибор.
9. Ты случайно не знаешь, как называется этот прибор? – Я думаю, что это пирометр. Он используется для измерения инфракрасного излучения. – Спасибо. – Не за что.

Time: 45min
Total Score: 50 points

Intermediate Lexical-Grammar Test
(Term 1. "Basic English for Technical Students" Part 1.)

Test 2

I. Fill in the gaps using the proper preposition.

1. I'm bad ... Physics.
2. The students are busy … a new task.
3. ... the right of the workshop there is a workbench.
4. This device is ... reading a thousandth of an ampere.
5. There is a great deal ... petrol ... this fuel mixture.
6. The lightest ... these metals is aluminium.
7. The text deals ... different properties of ferrous metals.
8. This instrument is known ... a multimeter.

II. Complete these sentences with *much, many, little/ a little, few/ a few.*

1. I have got too ... homework to do.
2. There are only ... screws on the bench. We need some more.
3. We have very ... time left. Let's hurry up.
4. Are there … instruments in the box?
5. Is there ... carbon in this alloy?
6. She has got too ... questions to ask about measurement standards.
7. I have … tools. Let's repair the car.
8. Would you like some more nails? - Yes, but only ... .

III. Form nouns from the following adjectives.

1. long –
2. triangular –
3. important –
4. elastic –
5. tough –
6. powerful –
7. wooden –
8. axial –

IV. Correct mistakes in the given sentences.

1. Who is he? - He is an engineer.
2. I'm really impressed with the design of this measuring device.
3. I'd like to know where is my thermometer.
4. Is glass brittler than cast iron?
5. A laser have its own power source and several lenses.
6. These objects has the shape of a cylinder, don't they?
7. The wide of the box is 6 cm.
8. These readings are more accurate then that ones.

V. Put questions to these sentences.

1. Plastic is lighter than metal. *(a general question)*
2. Electric wires are generally made of copper. (*an alternative question)*
3. There is some new equipment in the lab. *(a special question)*
4. These substances have different properties. *(a disjunctive question)*
5. An ammeter is used for measuring current .*(a disjunctive question)*
6. There are different instruments in the workshop. *(a disjunctive question)*
7. We make holes with the help of an electric drill. *(a special question)*
8. A thermometer is a device for measuring temperature of different bodies, liquids and gases. *(an alternative question)*

VI. Translate the following sentences into English.

1. Позвольте представиться. Я студент 1-ого курса приборостроительного факультета.
2. Олег, это мой хороший друг Иван. – Добрый день. – Добрый день.

3. По-моему, этот металл обладает свойством износоустойчивости.
4. Я считаю, что показания этого прибора неверные.
5. Видишь ли, свойства сплавов часто лучше свойств их составляющих.
6. Ты не мог бы мне дать тот калькулятор? – Нет, извини.
7. Между прочим, этот материал менее твердый, чем тот.
8. Насколько я помню, лазер используется для получения мощного пучка света.

Time: 60 min
Total Score: 56 points

Final Lexical-Grammar Test
(Term 2."Basic English for Technical Students". Part 1)

Test 1

I. Match the English words with their Russian equivalents.

1.	current	a.	изучать
2.	perform	b.	регулировать, настраивать
3.	investigate	c.	счётчик
4.	charge	d.	ток
5.	repair	e.	измерять
6.	counter	f.	чинить, ремонтировать
7.	adjust	g.	выполнять
8.	measure	h.	заряжать

II. Match the words with the similar meaning.

1.	use	a.	produce
2.	install	b.	essential
3.	include	c.	watch
4.	decrease	d.	apply
5.	generate	e.	reduce
6.	important	f.	set up
7.	work	g.	contain
8.	look at	h.	operate

III. Match the words with the opposite meaning.

1.	increase	a.	simple
2.	widen	b.	disadvantage
3.	motion	c.	decrease
4.	advantage	d.	inaccurate
5.	finish	e.	closed
6.	accurate	f.	rest
7.	complex	g.	shorten
8.	open	h.	start

IV. Fill in the gaps using the proper prepositions.

1. Four different scales are used … temperature measurement.
2. They were connecting leads … the multimeter.
3. The workshop is equipped … many machine-tools.
4. The students carried … the experiment yesterday.
5. They must compare the results … two tests.
6. They provide us … necessary equipment.
7. Petroleum is needed … all branches of industry.
8. The needle was indicating the value of the resistance … the scale.

V. Put these statements into the Past Tense and the Future Tense.

1. Paul can study a new device in the lab.
2. The student must measure the voltage in the mains.
3. They may use the speedometer to indicate the speed.
4. They can perform mathematical operations.
5. We must study the main components of a sensor.
6. The students must carry out some experiments with different electrical devices.
7. Oleg may test a manometer.
8. Measuring instruments can transform the measured quantity or a related quantity into an indication or information.

VI. Choose the correct tense form of the verbs.

1. We *have been shown / have shown* the analytical instrumentation tools lately.
2. The engineers *have already increased / have already been increased* the efficiency of nanoscale system.

3. The experiment *had been finished / will have been finished* before our practical classes were over.
4. The mechanic *will have repaired / have repaired* the pyrometer by the end of next month.
5. A lot of different operations *have been performed / had been performed* by the end of the practice.
6. All necessary information *had been obtained / will have been obtained* by the time the experiment began.
7. We *will have improved / have improved* the accuracy, repeatability and reproducibility of the measured data by the end of the year.
8. A new model of a lathe *will have been delivered / had been delivered* before a new academic year began.

VII. Choose the appropriate adverbial modifiers to complete these sentences.

a. since	e. tomorrow
b. usually	f. for
c. two years ago	g. yesterday
d. recently	h. by the end of the next month

1. Fuel is … stored in a fuel tank.
2. They will solve the problem … .
3. The polarization index test was conducted on HV machine … .
4. A new device has been installed in our physics laboratory … .
5. He will have repaired his tachometer … .
6. She has been an engineer … 17 years.
7. My friend graduated from the Technical University … .
8. We have been in the laboratory … 4 o'clock.

VIII. Translate these sentences from Russian into English using your active vocabulary.

1. Эти измерительные приборы будут отремонтированы через 2 недели.
2. Тестирование нового полупроводникового лазера будет закончено к концу месяца.
3. Этот материал широко используется в промышленности, так как он обладает свойством пластичности.

4. В данный момент студент проводит эксперимент с пультом дистанционного управления.
5. Когда Петр присоединял провода к мультиметру при помощи зубчатых зажимов, Лена наблюдала за показаниями на шкале прибора.
6. Вчера в 7 часов вечера он писал доклад о последних научных достижениях в области метрологии.
7. Что ты делаешь? – Я измеряю сопротивление разных проводников: медных, алюминиевых и железных.
8. Если прибор правильно калиброван, то он дает самые точные показания.

Time: 60 min
Total Score: 56 points

Final Lexical-Grammar Test
(Term 2."Basic English for Technical Students". Part 1)
Test 2

I. Match the English words with their Russian equivalents.

1. discharge	a. вмещать, содержать в себе
2. contain	b. опыт
3. improve	c. рассматривать вопрос, иметь дело
4. devise	d. показание
5. deal with	e. разряжать
6. apply	f. улучшать
7. experience	g. разрабатывать, создавать
8. indication	h. применять, использовать

II. Match the words with the similar meaning.

1. carry out	a. meter
2. study	b. control
3. fix	c. detail
4. check	d. quantity
5. amount	e. repair
6. gauge	f. characteristic
7. property	g. investigate
8. component	h. perform

III. Match the words with the opposite meaning.

1. swith on	a. find
2. lose	b. unreliable
3. important	c. connect
4. give	d. switch off
5. disconnect	e. temporary
6. the same	f. unimportant
7. permanent	g. different
8. reliable	h. receive

IV. Fill in the gaps using the proper prepositions.

1. Our workshops are equipped … automatic machinery.
2. He was measuring the resistance … two leads.
3. Barometers may be classified … two general types.
4. When are you going to carry … the experiment with an ammeter?
5. The multimeter is used … measuring three types of electrical units.
6. She has become famous … her invention.
7. I will complete this task … a week.
8. The dimensions of different materials completely depend … measurement standards.

V. Put these statements into the Past Tense and the Future Tense.

1. They can study the properties of engineering materials.
2. The engineer may use these substances for the experiment.
3. The students must attend all practical classes.
4. My friend may demonstrate the new applications of lasers.
5. Our engineers can extract copper in several ways.
6. They can control drug delivery systems.
7. The metrologist must check the methods for reliable and accurate data.
8. The engineers can complete the testing of a new sensor.

VI. Choose the correct tense form of the verbs.

1. New metal detectors *will have been designed / have been designed* according to technical specifications recently.

2. A new machine tool *had been devised / has devised* by the end of the week.
3. The workpiece *will have been cut / had been cut* by 2 o'clock tomorrow.
4. The new technology *has applied / has been applied* recently.
5. He *has just tested / has just been tested* the new equipment in the laboratory.
6. The course project *has been written / will have been written* by the end of the term.
7. A new model of a lathe *had been delivered / has delivered* by the end of our practice.
8. The students *will have published / will have been published* the article by the beginning of the conference.

VII. Choose the appropriate adverbial modifiers to complete these sentences.

a. yesterday
b. for three years
c. often
d. already
e. last term
f. in two years
g. from 5 till 7 yesterday
h. ago

1. Engineering students … carry out different experiments.
2. Alex was working in the lab … .
3. They have studied electrical devices … .
4. Mary completed the experiment a few minutes … .
5. The students tested a multimeter … .
6. They will graduate from the Technical University … .
7. I have … measured the dimensions of the workpiece.
8. We studied three types of electrical units … .

VIII. Translate these sentences from Russian into English.

1. Я полагаю, что манометр – это прибор для измерения давления, не так ли?
2. Дизельное топливо используется в различных типах двигателей.
3. Ценность сплавов была обнаружена ещё в древние времена.
4. Медь широко используется в медицине.

5. Двигатель является одним из главных компонентов любого транспортного средства.
6. Инженеры всегда контролируют автоматизированную систему управления технологическим процессом.
7. Они отремонтировали компаратор на прошлой неделе.
8. Существуют различные типы микрометров.

4. ВСПОМОГАТЕЛЬНЫЙ РАЗДЕЛ

4.1 Учебная программа

Белорусский национальный технический университет

УТВЕРЖДАЮ
Проректор по учебной работе
Белорусского национального
технического университета
_____ А.Г. Баханович
_____
Регистрационный № УД-ФГДЭ
08-__/уч.

ИНОСТРАННЫЙ ЯЗЫК (АНГЛИЙСКИЙ)

Учебная программа учреждения высшего образования по учебной дисциплине для технических и экономических специальностей
для очной формы получения высшего образования

2017

Учебная программа составлена на основе типовой учебной программы дисциплины «Иностранный язык» для высших учебных заведений, утвержденной Министерством образования Республики Беларусь 15 апреля 2008 года. Регистрационный №ТД-СГ.013/тип.

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(протокол № ….от ……)

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(протокол № …от ……)

Председатель методической комиссии

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(протокол № …от ……)

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ПОЯСНИТЕЛЬНАЯ ЗАПИСКА

Учебная программа по учебной дисциплине «Иностранный язык (английский)» разработана для очной формы получения высшего образования по следующим специальностям:

1-25 01 07 Экономика и управление на предприятии

специализация 1-25 01 07 30 Финансовое обеспечение и экономика боевой и хозяйственной деятельности войск

1-27 01 01 Экономика и организация производства (по направлениям)

направления специальности

1-27 01 01-01 Экономика и организация производства (машиностроение)

1-27 01 01-02 Экономика и организация производства (автомобильный транспорт)

1-27 01 01-03 Экономика и организация производства (автодорожное хозяйство)

1-27 01 01-08 Экономика и организация производства (приборостроение)

1-27 01 01-10 Экономика и организация производства (энергетика)

1-27 02 01 Транспортная логистика (по направлениям)

направление специальности

1-27 02 01-01 Транспортная логистика (автомобильный транспорт)

1-36 01 01 Технология машиностроения

1-36 01 02 Материаловедение в машиностроении

1-36 01 03 Технологическое оборудование машиностроительного производства

1-36 01 05 Машины и технологии обработки материалов давлением

1-36 01 06 Оборудование и технология сварочного производства

1-36 01 07 Гидропневмосистемы мобильных и технологических машин

1-36 02 01 Машины и технологии литейного производства

1-36 10 01 Горные машины и оборудование (по направлениям)

направление специальности

1-36 10 01-01 Горные машины и оборудование (открытые горные работы)

1-36 10 01-02 Горные машины и оборудование (подземные разработки)

1-36 10 01-03 Горные машины и оборудование (обогатительно-перерабатывающее производство)
направлений специальностей
1-36 11 01-04 Подъемно-транспортные, строительные, дорожные машины и оборудование (управление подразделениями инженерных войск)
1-37 01 01 Двигатели внутреннего сгорания
1-37 01 02 Автомобилестроение (по направлениям)
направление специальности
1-37 01 02-01 Автомобилестроение (механика)
1-37 01 02-01-02 Автомобилестроение (электроника)
1-37 01 03 Тракторостроение
1-37 01 04 Многоцелевые колесные и гусеничные машины (по направлениям)
направление специальности
1-37 01 04-01 Многоцелевые колесные и гусеничные машины (конструирование и производство)
направлений специальности
1-37 01 04-02 Многоцелевые гусеничные и колесные машины (эксплуатация и ремонт бронетанкового вооружения и техники)
1-37 01 06-02 Техническая эксплуатация автомобилей (военная автомобильная техника)
1-37 01 05 Городской электрический транспорт
1-37 01 06 Техническая эксплуатация автомобилей (по направлениям)
направление специальности
1-37 01 06-01 Техническая эксплуатация автомобилей (автотранспорт общего и личного пользования)
1-37 01 07 Автосервис
1-37 01 08 Оценочная деятельность на автомобильном транспорте
1-37 05 01 Дизайн гусеничных и колёсных машин
1-38 01 01 Механические и электромеханические приборы и аппараты
1-38 01 02 Оптико-электронные и лазерные приборы и системы
1-38 01 04 Микро- и наносистемная техника
1-38 02 01 Информационно-измерительная техника
1-38 02 02 Биотехнические и медицинские аппараты и системы
1-38 02 03 Техническое обеспечение безопасности

1-40 01 01 Программное обеспечение информационных технологий
1-40 05 01 Информационные системы и технологии (по направлениям)
1-41 01 01 Технология материалов и компонентов электронной техники
1-42 01 01 Металлургическое производство и материалообработка (по направлениям)
направление специальности
1-42 01 01-1 Металлургическое производство и материалообработка (металлургия)
1-43 01 01 Электрические станции
1-43 01 02 Электрические системы и сети
1-43 01 03 Электроснабжение (по отраслям)
1-43 01 04 Тепловые электрические станции
1-43 01 05 Промышленная теплоэнергетика
1-43 01 08 Паротурбинные установки атомных электрических станций
1-43 01 09 Релейная защита и автоматика
1-44 01 01 Организация перевозок и управление на автомобильном и городском транспорте
1-44 01 02 Организация дорожного движения
1-51 02 01 Разработка месторождений полезных ископаемых (по направлениям)
направление специальности
1-51 02 01-01 Разработка месторождений полезных ископаемых (открытые горные работы)
1-51 02 01-02 Разработка месторождений полезных ископаемых (подземные горные работы)
1-51 02 01-03 Разработка месторождений полезных ископаемых (обогащение полезных ископаемых)
1-51 02 01-04 Разработка месторождений полезных ископаемых (буровые работы)
1-51 02 01-05 Разработка месторождений полезных ископаемых (маршейдерское дело)
1-52 02 01 Технология и оборудование ювелирного производства
1-53 01 01 Автоматизация технологических процессов и производств (по направлениям)
направление специальности

1-53 01 01-01 Автоматизация технологических процессов и производств (Машиностроение и приборостроение)
1-53 01 01-02 Автоматизация технологических процессов и производств (в приборостроении и радиоэлектронике)
1-53 01 01-10 Автоматизация технологических процессов и производств (энергетика)
1-53 01 04 Автоматизация и управление теплоэнергетическими процессами
1-53 01 05 Автоматизированные электроприводы
1-53 01 06 Промышленные роботы и робототехнические комплексы
1-54 01 01 Метрология, стандартизация и сертификация (по направлениям)
направление специальности
1-54 01 01-01 Метрология, стандартизация и сертификация (машиностроение и приборостроение)
1-54 01 02 Методы и приборы контроля качества и диагностики состояния объектов
1-55 01 01 Интеллектуальные приборы, машины и производства
1-55 01 02 Интегральные сенсорные системы
1-55 01 03 Компьютерная мехатроника
1-57 01 02 Экологический менеджмент и аудит в промышленности
1-60 01 01 Техническое обеспечение эксплуатации спортивных объектов
1-60 02 02 Проектирование и производство спортивной техники
1-70 02 01 Промышленное и гражданское строительство
специализация
1-70 02 01 03 Техническая эксплуатация зданий и сооружений

Целью изучения учебной дисциплины является формирование иноязычной коммуникативной компетенции будущего специалиста, позволяющей использовать иностранный язык как средство профессионального и межличностного общения.

Основными задачами преподавания учебной дисциплины являются:

- переориентировать студентов в психологическом плане и практически с понимания иностранного языка лишь как внешнего источника информации и иноязычного средства коммуникации на

усвоение и использование иностранного языка для выражения собственных высказываний и понимания других людей;

- подготовить студентов к естественной коммуникации в устной и письменной формах иноязычного общения;

Знания и умения, полученные студентами при изучении данной дисциплины позволяют студентам использовать иностранный язык как средство получения, расширения и углубления системных знаний по специальности и средство самостоятельного повышения своей профессиональной квалификации.

В результате изучения учебной дисциплины «Иностранный язык (английский)» (в соответствии с образовательными стандартами: ОСВО-1-37 01 02, ОСВО-1-37 01 01, ОСВО-1-37 01 06, ОСВО-1-37 01 07, ОСВО-1-37 01 03, ОСВО-1-37 01 04, ОСВО-1-37 01 05, ОСВО-1-44 01 01, ОСВО-1-36 01 07, ОСВО-1-27 01 01, ОСВО-1-27 02 01, ОСВО-1-37 05 01, ОСВО-1-37 01 08, ОСВО-1-36 10 01, ОСВО-1-51 02 01, ОСВО-1-57 01 02, ОСВО-1-36 01 01, ОСВО-1-36 01 03, ОСВО-1-53 01 01, ОСВО-1-55 01 01, ОСВО-1-55 01 02, ОСВО-1-55 01 03, ОСВО-1-36 01 02, ОСВО-1-36 01 05, ОСВО-1-36 01 06, ОСВО-1-36 02 01, ОСВО-1-42 01 01, ОСВО-1-43 01 01, ОСВО-1-43 01 02, ОСВО-1-43 01 03, ОСВО-1-43 01 04, ОСВО-1-43 01 05, ОСВО-1-53 01 04, ОСВО-1-43 01 08, ОСВО-1-43 01 09, ОСВО-1-40 01 01, ОСВО-1-40 05 01, ОСВО-1-53 01 01, ОСВО-1-53 01 05, ОСВО-1-53 01 06, ОСВО-1-38 01 01, ОСВО-1-38 02 02, ОСВО-1-52 02 01, ОСВО-1-54 01 01, ОСВО-1-38 01 02, ОСВО-1-38 02 01, ОСВО-1-38 02 03, ОСВО-1-54 01 02, ОСВО-1-38 01 04, ОСВО-1-41 01 01, ОСВО-1-26 02 02, ОСВО-1-27 01 01, ОСВО-1-25 01 07 30, ОСВО-1-36 11 01 04, ОСВО-1-37 01 04 02, ОСВО-1-37 01 06 02, ОСВО-1-70 02 01 03, ОСВО-1-60 01 01, ОСВО-1-60 02 02) студент должен:

знать:

- особенности системы изучаемого иностранного языка в его фонетическом, лексическом и грамматическом аспектах (в сопоставлении с родным языком);
- социокультурные нормы бытового и профессионального общения, а также правила речевого этикета, позволяющие специалисту эффективно использовать иностранный язык как средство общения в современном поликультурном мире;

уметь:

- вести общение социокультурного и профессионального характера по проблемам и в объеме, предусмотренном настоящей программой;
- читать и переводить литературу по специальности (изучающее, ознакомительное, просмотровое, поисковое чтение);
- письменно выражать свои коммуникативные намерения в сферах, предусмотренных настоящей программой;
- понимать аутентичную речь на слух в объеме программной проблематики.

владеть:

- рецептивными умениями:

Аудирование

Студент должен уметь

- воспринимать на слух иноязычную речь в естественном темпе (аутентичные монологические и диалогические тексты профессионально-ориентированной направленности) с разной полнотой и точностью понимания их содержания;
- воспроизводить услышанное при помощи повторения, перефразирования, пересказа.

Учебные аудио- и видеотексты могут включать до 5% незнакомых слов, не влияющих на понимание основного содержания.

Чтение

Студент должен уметь:

- владеть всеми видами чтения (изучающее, ознакомительное, просмотровое, поисковое), предполагающими разную степень понимания прочитанного;
- полно и точно понимать содержание разножанровых аутентичных текстов, в том числе, профессионально ориентированных, используя двуязычный словарь (изучающее чтение);
- понимать общее содержание текста (70%), определять не только круг затрагиваемых вопросов, но и то, как они решаются (ознакомительное чтение);
- получать общее представление о теме, круге вопросов которые затрагиваются в тексте (просмотровое чтение);

• найти конкретную информацию (определение, правило, цифровые и другие данные), о которой заранее известно, что она содержится в данном тексте (поисковое чтение).

Тексты, предназначенные для просмотрового, поискового и ознакомительного чтения, могут включать до 10% незнакомых слов.

• продуктивными умениями:

Говорение

Монологическая речь

Студент должен уметь:

• продуцировать развернутое подготовленное и неподготовленное высказывание по проблемам социокультурного и профессионального общения, перечисленным в настоящей программе;

• резюмировать полученную информацию;

• аргументированно представлять свою точку зрения по описанным фактам и событиям, делать выводы.

Примерный объем высказывания – 15 фраз.

Диалогическая речь

Студент должен уметь:

• вступать в контакт с собеседником, поддерживать и завершать беседу, используя адекватные речевые формулы и правила речевого этикета;

• обмениваться профессиональной и непрофессиональной информацией с собеседником, выражая согласие/несогласие, сомнение, удивление, просьбу, совет предложение и т.п.;

• участвовать в дискуссии по теме /проблеме, аргументированно отстаивать свою точку зрения.

Примерное количество реплик – 8-10 с каждой стороны.

Письмо

Студент должен уметь:

• выполнять письменные задания к прослушанному, увиденному, прочитанному, логично и аргументированно излагать свои мысли, соблюдая стилистические и жанровые особенности;

• владеть навыками составления частного и делового письма, правильно использовать соответствующие реквизиты и формулы письменного общения;

• реферировать и аннотировать профессионально ориентированные и общенаучные тексты с учетом разной степени смысловой компрессии.

Освоение данной учебной дисциплины обеспечивает формирование следующих компетенций:

АК-1. Уметь применять базовые научно-теоретические знания для решения теоретических и практических задач.

АК-4. Уметь работать самостоятельно.

АК-8. Обладать навыками устной и письменной коммуникации.

СЛК-6. Уметь работать в коллективе.

СЛК-7. Самостоятельно приобретать и использовать в практической деятельности новые знания и умения, в том числе в новых областях знаний, непосредственно не связанных со сферой деятельности.

Согласно учебному плану для очной формы получения высшего образования на изучение учебной дисциплины отведено всего 288 ч., из них аудиторных – 136 часов для направления специальности:
1-54 01 01-01 Метрология, стандартизация и сертификация (машиностроение и приборостроение)

Распределение аудиторных часов по курсам, семестрам и видам занятий приведено в таблице 4.

Таблица 4

Курс	Семестр	Практические занятия, ч.	Форма текущей аттестации
1	1	34	зачет
1	2	50	зачет
2	3	52	экзамен

2 СОДЕРЖАНИЕ УЧЕБНОГО МАТЕРИАЛА

Раздел I. Модуль социального общения

Тема 1.1 Социально-бытовое общение

Личностные характеристики (биографические сведения, интересы).

Тема 1.2. Социокультурное общение

Социально-познавательная деятельность: жизнь студента (рабочий день, виды учебных занятий, общественная деятельность, досуг) и сравнение с жизнью студентов в стране изучаемого языка.

Тема 1.3. Системы образования

Типы учебных заведений в соизучаемых странах. Обучение в вузе. БНТУ.

Тема 1.4. Социокультурные нормы делового общения

Диалогическое и полилогическое общение в соответствии с ситуацией и коммуникативной задачей профессионального общения с соблюдением норм речевого и неречевого этикета.

Раздел II. Модуль профессионального общения

Тема 2.1. Профессиональное общение

Введение в специальность, ее предмет и содержание. Общее представление о структуре и характере профессиональной деятельности специалиста.

Тема 2.2. Посещение предприятий, соответствующих выбранной специальности

Знакомство студента с будущей профессиональной деятельностью.

Тема 2.3. Обмен научно-технической информацией

Обмен научно-технической информацией (на выставке, ярмарке, конференции).

Тема 2.4. Трудоустройство и карьера

Профессия инженера. Выбор и возможности трудоустройства.

Тема 2.5. Аннотирование текста

Составные части аннотации на иностранном языке. Клишированные фразы для написания аннотации.

Тема 2.6. Реферирование текста

Основные части реферата на иностранном языке. Составление активного словаря. Оформление списка использованной литературы.

Раздел III. Языковой материал

Тема 3.1. Фонетика

Звуковой строй иноязычной речи в сопоставлении с фонетической системой родного языка: особенности произнесения отдельных звуков (гласных, согласных), звукосочетаний, слов и фраз; расхождение между произношением и написанием; фонетическая транскрипция. Интонационное оформление фраз различного коммуникативного типа: повествования, вопроса, просьбы, приказа, восклицания. Фразовое и логическое ударение в сложном предложении.

Тема 3.2 Грамматика. Имя существительное

Категории числа, падежа, определенности.

Тема 3.3. Имя прилагательное

Категория степеней сравнения. Сравнительные конструкции.

Тема 3.4. Местоимения

Личные, притяжательные, указательные, вопросительные, неопределенные, возвратные.

Тема 3.5. Числительные

Простые, производные и сложные, количественные, порядковые, дробные.

Тема 3.6. Наречие

Классификация, категория степеней сравнения.

Тема 3.7. Глагол

Видо-временная система, действительный и страдательный залог, модальные глаголы и их эквиваленты; согласование времен.

Тема 3.8. Неличные формы глагола

Инфинитив, причастие, герундий и конструкции с ними.

Тема 3.9. Словообразование

Словообразовательные модели (существительное, прилагательное, наречие, глагол).

Тема 3.10. Служебные слова

Предлоги, союзы, союзные слова.

Тема 3.11. Синтаксис. Простое предложение

Типы простых предложений; порядок слов; члены предложения, способы выражения подлежащего и сказуемого, правила их согласования, специфические конструкции и обороты.

Тема 3.12. Сложное предложение

Сложносочиненное и сложноподчиненное, типы придаточных предложений; бессоюзное подчинение.

Тема 3.13. Прямая и косвенная речь

Правила перевода в косвенную речь предложений разных типов.

Тема 3.14. Лексика

Наиболее употребительные слова и словосочетания по предметно-тематическому содержанию курса. Сочетаемость слов, свободные и устойчивые словосочетания. Общенаучная лексика и терминология.

Тема 3.15. Наиболее распространенные формулы-клише

Знакомство, установление/поддержание контакта, выражение просьбы, согласия/несогласия с мнением автора/собеседника, начало, продолжение, завершение беседы, выражение собственного мнения, запрос о мнении собеседника, уверенность/неуверенность.

УЧЕБНО-МЕТОДИЧЕСКАЯ КАРТА
УЧЕБНОЙ ДИСЦИПЛИНЫ
очная форма получения высшего образования для направления специальности:

1-54 01 01-01 Метрология, стандартизация и сертификация (машиностроение и приборостроение)

Номер раздела, темы	Название раздела, темы	Количество аудиторных часов	Форма контроля знаний
		Практические занятия	
1	2	3	4
	1 семестр		
1.	Модуль социального общения		
1.1	Социально-бытовое общение	4	
1.2	Социокультурное общение	6	
1.3	Системы образования	8	
1.4	Социокультурные нормы делового общения	4	
3.	Языковой материал		
3.1	Фонетика	2	
3.2	Грамматика. Имя существительное	2	
3.3	Имя прилагательное	2	
3.4	Местоимения	2	

3.5	Числительные	2	
3.6	Наречие	2	
	Итого за семестр	34	зачет
	2 семестр		
2	Модуль профессионального общения		
2.1	Профессиональное общение	6	
2.2	Посещение предприятий, соответствующих выбранной специальности	4	
2.3	Обмен научно-технической информацией	2	
2.4	Трудоустройство и карьера	12	
3	Языковой материал		
3.7	Глагол	6	
3.8	Неличные формы глагола	10	
3.9	Словообразование	2	
3.10	Служебные слова	2	
3.14	Лексика	6	
	Итого за семестр	50	зачет
	3 семестр		
2	Модуль профессионального общения		
2.5	Аннотирование текста	8	
2.6	Реферирование текста	8	
3	Языковой материал		
3.11	Синтаксис. Простое предложение	4	
3.12	Сложное предложение	4	
3.13	Прямая и косвенная речь	8	
3.14	Лексика	16	
3.15	Наиболее распространенные формулы-клише	4	
	Итого за семестр	52	экза-мен
	Всего аудиторных часов	136	

4 ИНФОРМАЦИОННО-МЕТОДИЧЕСКАЯ ЧАСТЬ

Список литературы

Основная литература

1. Английский язык для студентов технических вузов: основной курс. Basic English for Technical Students: учеб. пособие для вузов/ С.А. Хоменко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск: Вышэйшая школа, 2004. В 2 ч. – 494 с.
2. Кипнис, И.Ю. Грамматические особенности перевода английского научно-технического текста. Грамматический справочник / И.Ю. Кипнис, С.А. Хоменко. – Минск, 2010. – 121 с.
3. Learning to Talk Shop. Профессиональное общение на английском языке / С.В. Острейко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск, 2007. – 162 с.
4. Методическое пособие по обучению устной речи для студентов технических вузов / И. Ю. Ваник [и др.]. – Минск : БНТУ, 2012. – 65 с.
5. Tests in the Use of Technical English / С.А.Хоменко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск: Амалфея, 2003. – 240 с.
6. Хоменко, С.А. Brush up your English / С.А. Хоменко, В.Ф. Скалабан, А.И. Гресь. – Минск, 2003. – 119 с.
7. Хоменко, С.А. Reading, Speaking, Writing. Методическое пособие для студентов старших курсов, магистрантов и аспирантов технических специальностей вузов / С.А Хоменко, В.Ф. Скалабан, С.П. Личевская. – Минск , 2007. – 176 с.
8. Хоменко, С.А. Основы теории и практики перевода научно-технического текста с английского языка на русский. Учебное пособие / С.А. Хоменко, Е.Е. Цветкова, И.М. Басовец. – Минск, 2004. – 204 с.

Дополнительная литература

1. Хитрик, А.С. Speech Practice / А.С. Хитрик, А.С. Хоменко. – Минск, 2003. – 132 с.
2. Хитрик, А.С. Let Us Speak English / А.С.Хитрик, С.А. Хоменко, Э.И. Жорова. – Минск, БНТУ, 2005. – 112 с.

3. Хоменко, С.А. Сборник типовых тестов. Английский язык / С.А. Хоменко, В.Ф. Скалабан. – Минск: ТетраСистемс, 2005. – 112 с.
4. Murphy, R. English Grammar in Use / R. Murphy. – Cambridge University Press, 1997. – 350 p.

4.1 Средства диагностики компетенций студента (Модуль контроля)

Оценка уровня знаний студента производится по десятибалльной шкале в соответствии с критериями, утвержденными Министерством образования Республики Беларусь.

Для оценки достижений студента рекомендуется использовать следующий диагностический инструментарий:

– устный и письменный опрос во время практических занятий;

– проведение текущих контрольных работ (заданий) по отдельным темам;

– защита выполненных в рамках самостоятельной работы индивидуальных заданий;

– выступление студента на конференции по подготовленному реферату;

– сдача зачета по дисциплине;

– сдача экзамена.

Содержание экзамена

1. чтение текста объемом 1200-1400 печатных знаков, письменный перевод 1200 печ. знаков (со словарем) (45 мин.); форма контроля – чтение текста на иностранном языке вслух (выборочно) и проверка выполненного перевода;
2. реферативное изложение текста объемом 2000 печатных знаков, ответы на вопросы преподавателя по содержанию прочитанного (15 мин.);
3. ситуативно-обусловленная беседа по изученной проблематике.

Методические рекомендации по организации и выполнению самостоятельной работы студентов

При изучении дисциплины рекомендуется использовать следующие формы самостоятельной работы:

– выполнение индивидуальных заданий в аудитории во время проведения практических занятий под контролем преподавателя в соответствии с расписанием;

– подготовка рефератов по индивидуальным темам.

Методы (технологии) обучения

Основными методами (технологиями) обучения, отвечающими целям изучения дисциплины, являются:

– элементы проблемного обучения, реализуемые на практических занятиях;

– элементы учебно-исследовательской деятельности, творческого подхода, реализуемые на практических занятиях и при самостоятельной работе;

– коммуникативные технологии (дискуссия, учебные дебаты, мозговой штурм и другие формы и методы), реализуемые на практических занятиях и конференциях;

– проектные технологии;

– компьютерные технологии, предполагающие широкое использование Интернет-ресурсов и мультимедийных обучающих программ.

4.2 Методические рекомендации по обучению профессионально ориентированному устной речи

См. Ваник, И.Ю. Методическое пособие по обучению устной речи для студентов технических вузов / И.Ю. Ваник, Е.Г. Ляхевич, О.А. Лапко, Н.В. Сурунтович. – Мн.: БНТУ, 2012. – 66 с.
https://drive.google.com/file/d/0B46Mchya94h1bXNCcWtiYUVxaUU/view?usp=sharing

В связи с тем, что в настоящее время обучение говорению является одной из главных целей обучения иностранному языку, ведущий методический принцип данного учебного пособия – принцип коммуникативной направленности. Это означает, что обучение строится на вовлечении студентов в устную коммуникацию, т.е. общение на изучаемом языке должно реализовываться на протяжении всего курса в форме монологической и диалогической речи.

Следуя данному подходу, методическое пособие по обучению устной профессионально ориентированной речи студентов включает в себя комплекс упражнений, направленных на формирование навыков устной монологической и диалогической речи.

Говорение характеризуется наличием сложной мыслительной деятельности с опорой на речевой слух, память, прогнозирование, внимание. Поэтому для говорения как самостоятельного вида речевой деятельности характерны три этапа: этап планирования, осуществления и контроля. Рассмотрим данный процесс на примере формирования навыков устной монологической и диалогической речи при изучении темы "The BNTU".

На **первом этапе (этапе планирования)** изучения темы "The BNTU" мы рекомендуем:

1. выполнение упражнений Starting-up для активизации фактических знаний студентов и подготовки их к восприятию нового тематического материала. Предпочтительно использовать условно-речевые упражнения, которые характеризуются ситуативностью, наличием речевой задачи. Следует отметить необходимость использования вербальных опор ФСТ, особенно для студентов с низким уровнем языковой подготовки. Например, *Give your opinion on the statement 'Knowledge is power', using the expressions from the Useful language box:*

Useful language
In my opinion, one of the most important things in our life is…
I consider that learning is always hard but…
From my point of view, many young people…
As I see it, it is necessary to …
I believe getting higher education is a good way to find…
It seems to me, education provides a good opportunity to…
I'm sure that deep knowledge in different fields helps to…
It is clear that in order to be successful you have to…

2. введение блока новых лексических единиц, их тренировку и закрепление при помощи переводных и беспереводных способов их семантизации, используя подстановочные и трансформационные упражнения. Например,

- *Complete the sentences below with the following word combinations.*

Academic staff, full-time and part-time basis

… supports students to develop the skills they need to do well in their studies.

The university offers an opportunity for students to study on …

- *Translate the sentences below into English using your active vocabulary.*

На **втором этапе (этапе осуществления)** обучения, учитывая низкий уровень подготовки студентов технического вуза, следует использовать **текст-образец.** Следует отметить, что при отборе текстов для обучения монологической речи необходимо обращать внимание на их развивающий и культурологический потенциал, мотивационную способность, а также на проблемный и изучающий характер содержания, то есть, может ли он являться источником дополнительной информации, образцом, стимулом для порождения собственного высказывания. Учитывая невысокий уровень языковой подготовки студентов технического вуза, преподавателю предлагается детально проработать текстовый материал на всех языковых уровнях:

- *на фонетико-фонологическом уровне* при чтении текста следует акцентировать внимание студентов на лексических единицах, сложных для произношения. Например, *Check the unknown words in the dictionary, Repeat after the teacher.*

- *на уровне прогнозирования* преподаватель может предложить студентам сделать предположение о содержании текста по заглавию, по первому абзацу, по ключевым словам. Например, *Do the general knowledge quiz below and then check your answers by reading the text.*

- *на лексико-грамматическом уровне* при переводе текста преподавателю необходимо обращать внимание на лексические и грамматические особенности его перевода: явления интерференции, пере-

вод многозначных и многофункциональных слов, на словообразовательный анализ, а также анализ структуры сложного предложения и сложных оборотов с неличными формами глагола. Так, например, в предложении, '*The BNTU graduates stand at the forefront of Belarusian industry possessing strong leadership characteristics, ingenuity and technical proficiency'* следует обратить внимание на контекстуальное значение слова *'forefront',* на способы словообразования слов *'Belarusian', 'leadership',* на перевод именной группы *'leadership characteristics';* а также на перевод неличной формы глагола *'possessing'*.

- *на уровне понимания прочитанного текста* преподавателю рекомендуется выполнять репродуктивные упражнения. При осуществлении контроля за сформированностью монологической речи следует исходить из того, что на репродуктивном уровне контролируется правильность воспроизведения, темп и эмоциональная окрашенность. Например, *Answer the questions about the text, Define the statements as true or false.*

На **третьем этапе (этапе контроля)** студенты строят самостоятельные монологические высказывания. Следует использовать условно-речевые и речевые упражнения, предполагающие некоторые элементы творческого и самостоятельного высказывания. Так, студент комбинирует изученные ранее речевые образцы, добавляет или изменяет лексические единицы, а также на основе своего языкового и речевого опыта может выразить свое отношение к фактам и событиям, построить высказывание в соответствии со своим замыслом. На репродуктивно-продуктивном уровне контролируется и оценивается объем высказывания, языковая правильность и соотношение репродуктивного и продуктивного. На продуктивном уровне оценивается объем, его языковая правильность и самостоятельность в выборе языковых средств, в логике построения, умении начать изложение, развернуть его должным образом и закончить высказывание. Например, '*The University Open Day is a day to discover what it's really like to be at University'. Have you attended the Open Day? If yes, then was the visit useful? Describe your general impressions. If you haven't attended the Open Day, describe what applicants (абитуриенты) can find out on this day using your general knowledge and expressions from the Useful language box.*

Useful language

to have the opportunity to look around the campus, to find out detailed information about the admission process and career prospects, to take part in a number of talks on many aspects of life and study at the University, to find information on issues such as scholarships and fees (оплата за обучение), accommodation and extracurricular activities, to gain impression of a student life at the University, to have the chance to talk to the current students and hear a firsthand account (мнение из первых уст) of the student experience, to learn more about courses and facilities, to have the opportunity to ask the Faculty staff any questions about the Faculty and the courses it offers

You can begin like this: 'The Open Day as a whole was an amazing experience because it gave me an idea of what to expect if I were to study at the BNTU. I learnt more about ...'

Что касается обучения диалогической речи на **втором** и **третьем этапах**, необходимо учитывать **технику пошагового овладения диалогическим единством**. Используя этот способ, удобно обучать разворачиванию реплики и вкраплению микродиалогов. Для этого стимулирующая реплика строится таким образом, что она вызывает развернутый ответ. Например,

A: Excuse me, are you also a BNTU student?

B: Yeah, I'm a first-year student of Mechanical Engineering Faculty.

Техника пошагового овладения диалогической речью подразумевает несколько уровней овладения диалогическим единством. Однако в условиях технического вуза из-за ограниченного количества часов, отводимого на изучение дисциплины «Иностранный язык (английский)», мы рекомендуем объединять несколько уровней:

- *Овладение студентами отдельными репликами (переспрос, запрос об информации, просьба) и умение соотносить их друг с другом (утверждение-переспрос, утверждение-несогласие).* Например,

Put the words in these questions in the correct order. Then match them with the answers to make a dialogue about the University.

1. it / for you / hard / university life / to settle down / was / into?
2. any / there / difference / is / university and school / between?
3. you / feel / any / do / support / the teachers / from?

a. Well, it was a bit scary, to be honest, leaving home for the first time, going to live in a new place, but I quickly settled in and found it very friendly.

b. I think there's a big difference between university and school. Here you're far more independent and responsible for your own learning.

c. There are really good teachers. They really give a lot of help. It might seem there's no support there, but as soon as you just ask for it, it's always available.

- *Овладение типами микродиалогов* (двусторонний диалог-расспрос) и на основе этих микродиалогов *овладение умением вести развернутый диалог*. Так, например, в данном пособии студентам предлагается изучить несколько диалогов, объединенных общей тематикой, и на их основе составить развернутый диалог, используя различные типы микродиалогов. Например,

Role-play the University Open Day. Work in pairs to complete the dialogues below. Discuss university life at the BNTU. Student A is an applicant who wants to learn more about university life. Student B is a current BNTU student who offers firsthand advice based on his/her experience of life at the University.

Dialogue 1

A: Excuse me, are you a BNTU student?

B: Yeah, I'm a first-year student of Mechanical Engineering Faculty.

A: You know, I'm going to enter the BNTU this year. Do you have any idea if all the Faculties are located on the campus?

B: Sure, many Faculties including Automobile and Tractor Faculty are located on the campus, others are in a short walk from it.

Dialogue 2

A: Excuse me, I'm looking for the Automobile and Tractor Faculty?

B: Yeah, it's situated in Building 8.

A: Oh, the campus is so large! Is there a library and a sports complex?

B: Actually, there are all these facilities on the campus. The BNTU library is one of the largest university libraries in Belarus. A state-of-the-art sports complex offers indoor and outdoor sports facilities.

Dialogue 3

A; Excuse me, is there a café on the campus?

B: Sure, there is a café or a canteen in each building. They serve a wide range of hot meals, snacks, drinks.

A: Thanks. By the way, don't you live in the halls of residence? I'm just interested, as I'm going to enter the BNTU this year.

B: I see. Yeah, I have the University's accommodation.

Dialogue 4

A: Excuse me, is there a photocopy centre on the campus?

B: Yes, the nearest one is in the library.

A: What other facilities are available at the library? I'm just interested, as I'm going to enter the BNTU this year.

B: Oh, I see. As I know, there is a Wireless Access Point, a lot of reading halls and computing centers.

На этапе контроля студенты составляют диалог в соответствии с ситуацией, данной преподавателем, на основе изученных ранее диалогических единств. Суть этой тактики заключается в том, что когда перед говорящим возникает цель, он обдумывает, как ее можно достичь, т.е. тактическую линию своего поведения. Преподаватель в данном случае может оказать помощь, предоставляя функциональную модель диалога студентам.

4.3 **Методические рекомендации по переводу научно-технического текста**

См. Журковская, В. Б. Основы теории перевода с английского языка на русский : курс лекций : учеб. пособие / сост. В. Б. Журковская ; ГУО «Акад. последиплом. образования». – Минск : АПО, 2015. – 96 с.

Виды перевода научно-технического текста

Полный письменный перевод

Из всех видов технического и научного переводов полный письменный перевод является основной формой. Все остальные виды технического перевода являются производными формами полного письменного перевода, его сокращенными вариантами.

При выполнении полного письменного перевода необходимо помнить правила перевода, рассматривающие, в какой последовательности переводить текст и каких ошибок следует избегать. Работа над полным письменным переводом состоит из последователь-

ных этапов, формулировка содержания которых и составляет правила полного письменного перевода.

Процесс выполнения полного письменного перевода научно-технической литературы – это активный, целенаправленный процесс, состоящий из трех частей:

- зрительное или слуховое восприятие на иностранном или родном языке;
- понимание и осмысленный анализ;
- перевод.

Рекомендуется соблюдать следующую последовательность работы над оригиналом.

1. Чтение оригинала.
2. Разметка текста (аналитическое понимание):

- выявление сложных терминов,
- выявление грамматических структур,
- выявление сложных лексических оборотов.

3. Использование словаря (поиск незнакомых или непонятных терминов в общих или специальных словарях).
4. Использование справочников и специальной литературы.

При первом чтении текста оригинала знакомятся с общим содержанием текста. Следующим этапом работы с текстом является аналитический анализ, или разметка текста: выявление грамматических форм, сложных конструкций, лексических оборотов, понимание отдельных слов и терминов. С этой целью текст читается повторно, медленно. При переводе необходимо помнить типичные ошибки, чтобы не допускать их, а именно:

- стремление перевести все элементы предложения в той последовательности, в какой они представлены в тексте оригинала;
- игнорирование контекста при установлении значения слова;
- неправильный выбор значения слова в словаре;
- стремление сохранить в переводе специфические для одного языка грамматические конструкции, отсутствующие в другом языке.

Особое внимание необходимо уделить поиску правильного значения слова с учетом контекста, внешним признакам слова, проведению морфологического и синтаксического анализа, работе со словарем. Поэтому представляется целесообразным:

- определить место группы подлежащего и сказуемого в предложении;
- начинать анализ предложения со сказуемого в предложении.

Для получения адекватного перевода научно-технического текста нужно следовать определенным требованиям. Перечислим основные из них.

1. Точная передача текста оригинала.
2. Ясность изложения мысли и форма изложения, присущая научно-технической литературе языка перевода.
3. Перевод должен полностью отвечать общепринятым нормам литературного языка. Кроме того, необходимо помнить, что смысловая насыщенность предложения в английском языке к концу предложения ослабевает, а в русском языке — наоборот. Такое отличие объясняется структурой английского предложения.
4. При научном и литературном редактировании необходимо соблюдать единую терминологию, стандартные обозначения и сокращения. Перевод должен быть четким и сопровождаться соответствующими иллюстрациями (если они имеются) к тексту. При выборе переводного эквивалента в словаре необходимо учитывать контекст, так как многие термины научно-технической литературы многозначны в разных сферах науки и техники и даже в пределах одной отрасли могут иметь разные значения.

Поскольку научно-техническая терминология постоянно развивается, даже уже широко распространенные термины могут приобретать новые значения. Если в тексте оригинала встречается термин, которого нет в словарях данной отрасли, то необходимо подобрать переводной эквивалент, используя справочники или специальную литературу. Можно создать новый эквивалент с учетом моделей образования терминов или перевести этот термин описательным путем, сохранив его в скобках на языке оригинала.

Реферативный перевод

Реферативный перевод является сокращенным вариантом полного письменного перевода. Название «реферативный» происходит от слова «реферат». Реферат – это краткое изложение сущности какого-либо вопроса. Реферативный перевод – это полный письменный

перевод заранее отобранных частей оригинала, составляющих связный текст.

Однако способы краткого изложения сущности вопроса могут быть разными. В области технического перевода определились следующие основные формы составления реферата, которым соответствуют такие самостоятельные виды технического перевода, как:

- реферативный перевод,
- перевод типа «экспресс-информация»,
- консультативный перевод.

Как правило, реферативный перевод должен быть значительно короче оригинала (в 5-10 раз), так как в процессе работы над реферативным переводом требуется исключение всей избыточной информации.

Основные этапы работы над реферативным переводом.

1. Предварительное знакомство с оригиналом, ознакомление с данной областью знаний и ее терминологией, внимательное чтение всего текста.
2. Разметка текста с помощью скобок для исключения его второстепенных частей и повторений (исключаемые части текста берутся в скобки).
3. Чтение оригинала без исключенных частей.
4. Полный письменный перевод выбранной части оригинала, которая должна представлять собой связный текст.

Если в оригинале есть чертежи, рисунки, то необходимо выбрать наиболее важные и объяснить их в переводе.

Перевод типа «экспресс-информация» – вид письменного технического перевода, заключающийся в составлении на русском языке реферата научно-технической статьи или патента. При работе над рефератом типа «экспресс-информация» необходимо детально изучить оригинал, а затем изложить его суть со своей точки зрения, по своему собственному плану, в любой последовательности, однако не следует выражать свои собственные соображения или давать оценку оригиналу.

Консультативный перевод (перевод для специалиста) – это вид устного технического перевода, включающий устное аннотирование, устное реферирование, устный перевод заголовков, выполняемый консультантом-переводчиком. Консультант-переводчик помогает своим знанием языка различным специалистам отобрать нуж-

ный материал и решить вопрос дальнейшей обработки материала: делать ли полный перевод, реферативный перевод, экспресс-информацию и т.д.

Аннотационный перевод

Аннотационный перевод – это вид технического перевода, заключающийся в составлении аннотации оригинала на другом языке. Аннотация – это краткая, сжатая характеристика содержания и перечень основных вопросов книги, статьи, рукописи. Для того чтобы сделать аннотационный перевод, необходимо прочитать книгу или статью, составить план, затем сформулировать основные положения, перечислить основные вопросы. Стиль аннотационного перевода книги или статьи отличается свободным переводом, т.е. дается главная характеристика оригинала. Аннотация специальной статьи или книги – это краткая характеристика оригинала, излагающая его содержание в виде перечня основных вопросов и иногда дающая критическую оценку. Из этого определения вытекает, что такая аннотация должна дать читателю представление о характере оригинала (научная статья, техническое описание и т.д.), о его строении (какие вопросы и в какой последовательности рассматриваются). Перечислим требования, которых следует придерживаться при составлении аннотаций на печатные работы.

1. Аннотации должны быть составлены так, чтобы их содержание было доступно для усвоения при первом же прочтении, в то же время должны быть отражены все наиболее важные моменты первоисточника.
2. Аннотации должны отражать научную информацию статьи и не содержать субъективных взглядов автора.
3. Язык аннотации должен быть лаконичным, точным и в то же время простым, лишенным сложных синтаксических построений.
4. В текст аннотаций часто вводятся неопределенно-личные местоимения и страдательно-возвратные конструкции типа: сообщается, описывается, излагается и т.д.
5. Употребление терминологии, сокращений, условных обозначений в аннотациях должно соответствовать нормам, принятым в конкретной области знаний.

6. В силу незначительного объема аннотация должна раскрывать, а не повторять иными словами заголовок источника информации.

7. Вид и объем аннотации зависят от значимости аннотируемого материала и его особенностей, а также от целевого назначения аннотации.

Для структуры описательной аннотации характерны три составные части.

1. Вводная часть, обязательно включающая название работы (оригинала) на языке перевода и название статьи на языке оригинала (можно в скобках). Необходимо также включить: фамилию и имя автора, название журнала или книги, место издания и издательство на иностранном языке, а также год, месяц, число, номер периодического издания, страницы.

2. Описательная часть, называющая тему и содержащая перечень основных положений оригинала или предельно сжатую характеристику материала.

3. Заключительная часть, подытоживающая изложение автора первоисточника. При необходимости в этой же части приводятся ссылки на количество иллюстраций и библиографию.

При переводе научно-технического текста особое внимание следует уделять лексическим и грамматическим аспектам перевода. Ниже приведены примеры заданий по обучению им.

1. ***Лексические аспекты перевода:*** Интернациональные и псевдоинтернациональные слова.

2. ***Грамматические аспекты перевода:*** Некоторые особенности перевода причастия на русский язык.

3. ***Текст:*** Metrology and its Role in International Trade.

Лексические аспекты перевода

Exercise 1. **Прочитайте интернациональные слова и определите их значение по сходству корней в русском языке.**

Metrology, meteorology, infrastructure, organization, national, system, laboratory, theoretical, practical, mass, temperature, standard, certificate.

Примечание: Иногда при переводе приходится сталкиваться с английскими и русскими словами, близкими по форме, но различными по значению. Такие слова называют псевдоинтернациональными или «ложными словами переводчика».

Exercise 2. **Определите интернациональные и псевдоинтернациональные слова и переведите на русский язык. Обратите внимание на случаи расхождения значения слов - «ложных друзей переводчика».**

Accurate, activity, national, regional, management, interest, practical, aspect, problem, general, standard, instrument, production, organization, industry, system, document, method, international, legal, principal, public, control, practice, process, global, specification, data.

Exercise 3. **Переведите следующие предложения, обращая внимание на интернациональные и псевдоинтернациональные слова.**

1. The part of metrology which deals with problems common to all metrological questions irrespective of the quantity measured is called general metrology.
2. The concept of traceability is important because it provides the possibility of comparing the accuracy of measurements, according to a standardized procedure for the estimation of the uncertainty of the measurement.
3. Quality management (QM) includes the development of practices from which both processes and people benefit and which enable the organization to produce products and services that enhance customer focus.
4. The regional networks will have to base their activities on mutual international and interregional exchange of information, mutual confidence and international harmonization.
5. One means of improving the value of inspection is to incorporate it into a quality control system, i.e. to control the process by feeding back the reasons for bad products or variations to the persons or processes involved in their manufacture.

Грамматические аспекты перевода

Exercise **1. Определите функцию** Participle **I в следующих предложениях. Переведите на русский язык.**

1. When choosing measurement standards for the calibration it is essential to use standards that are traceable to national and/or international standards.
2. Confirmation intervals should be fixed taking into account the most important factors relevant to the equipment in question.
3. Being exposed to improper electrical supply the instrument need immediate recalibration.
4. The laboratory is accredited by an accreditation body working in accordance with the relevant International ISO Guide.
5. Measuring instruments causing errors should be regularly verified.
6. There are now about 50 nations adhering to the Convention, among which figure all of the major industrialized nations.
7. Having been signed in Paris in 1875 the Treaty of the Metre established the metric system as the international system of units for international trade.
8. The measurements being carried out correctly gave accurate and undoubtful results.
9. While speaking of high accuracy devices one should mention laboratory standard instruments.

Exercise 2. **Переведите предложения** с Participle II **в функции определения.**

Примечание: Причастие II в функции определения, стоящее в английском языке после определяемого слова, при переводе ставится перед определяемым словом. (The results obtained were accurate. – Полученные результаты были точными.)

Если в предложении стоят две глагольные формы с окончанием -ed, то первая форма является причастием в функции определения, вторая – сказуемым в Past Simple.

1. The price of traded goods depends on the quantity involved.
2. Calibration certificates contain a description of the calibration procedure, the information about the standards used, the results obtained and

the estimated uncertainty of the calibration.
3. The instrument calibrated should be durably labelled.
4. The term used included both theoretical and practical aspects of measurements.

Текст: Metrology and its Role in International Trade

Exercise 1. Read and translate the following text paying attention to international words and participles.

The first point that appears clear to all observers is the tendency towards the globalization of economies. The shift from local to national economies started centuries ago, but the worldwide development of this trend has shown such an acceleration over the last twenty years that no activity in any country can be isolated from the influence and competition of the rest of the world.

The development of international trade has allowed commodities and industrial products to circulate throughout the world and although tariff and technical barriers to trade still remain, worldwide competition has become a reality. No industry in any part of the world can ignore what competitors from other countries, even far away, are developing and providing. Barriers to trade are a false protection for industry, because they are a burden for clients who demand the best possible products and services.

The globalization of financial markets and their interconnection using new information technologies results in the development of multinational industrial groups that are able to better develop new products and new technologies, and hence allocate their production resources worldwide in the most strategic way. The trend is now that manufacturers of measuring instruments are merging (or have already merged) into large multinational companies. Small manufacturers may still exist when small segments of markets remain, but they mainly adapt components or modules developed and produced by these multinational manufacturers.

In the not too distant future, it is likely that all technical progress and all new technologies in measuring instruments will emanate from a limited number of multinational manufacturers and be used worldwide, and very often at a lower cost than traditional technologies. National manu-

facturers will probably limit their activity to adapting these I international products to specific local needs.

4.5 Рекомендуемая литература

Основная литература

1. Английский язык для студентов технических вузов: основной курс. Basic English for Technical Students: учеб. пособие для вузов/ С.А. Хоменко [и др.]; под общ. ред. С.А. Хоменко, В.Ф. Скалабан. – Минск: Вышэйшая школа, 2004. В 2 ч. – 494 с.
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