

**МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ
РОССИЙСКОЙ ФЕДЕРАЦИИ**
Федеральное государственное бюджетное образовательное учреждение
высшего образования
«Воронежский государственный технический университет»
Строительно-политехнический колледж

МЕТОДИЧЕСКИЕ УКАЗАНИЯ

к учебному материалу на английском языке
для практических занятий и самостоятельной работы
по дисциплине "Иностранный язык в профессиональной деятельности"
для студентов специальностей 11.02.16 Монтаж и техническое
обслуживание и ремонт электрических приборов, 11.02.01
Радиоаппаратостроение, 11.02.17 Разработка электронных устройств и
систем, очной формы обучения

Методические указания обсуждены на заседании методического совета
СПК

«18» 02. 2022 года Протокол № 6

Председатель методического совета СПК  Сергеева С. И.

Методические указания одобрены на заседании педагогического совета
СПК

«25» 02. 2022 года Протокол № 6

Председатель педагогического совета СПК  Дегтев Д.Н.

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ББК 81.2 Англ

Методические указания к учебному материалу на английском языке для практических занятий и самостоятельной работы по дисциплинам Иностранный язык и Иностранный язык в профессиональной деятельности для студентов специальностей 11.02.16 Монтаж и техническое обслуживание и ремонт электрических приборов и устройств, 11.02.01 Радиоаппаратостроение, 11.02.17 Разработка электронных устройств и систем, очной формы обучения/ ФГБОУ ВО «Воронежский государственный технический университет»; сост. Н.В. Аленкова, 2022. 21 с.

Методические указания содержат учебные тексты и задания для аудиторной работы. Они предназначены для развития навыков чтения, реферирования и аннотирования литературы по специальности, а также для развития навыков говорения и расширения терминологической лексики. Задания содержат упражнения на усвоение лексических единиц по специальности и развитие навыков говорения.

Предназначены для студентов 3-4-5 курсов.

Библиогр.: 6 назв.

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Ответственный за выпуск директор СПК Дегтев Д.Н.

Печатается по решению редакционно-издательского совета
Воронежского государственного технического университета

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UNIT 1

WIRELESS

1. Read the text and single out its main ideas:

The term "**wireless**" is normally used to refer to any type of electrical or electronic operation which is accomplished without the use of a "hard wired" connection. **Wireless communication** is the transfer of information over a distance without the use of electrical conductors or wires. The distances involved may be short (a few meters as in television remote control) or very long (thousands or even millions of kilometers for radio communications). When the context is clear the term is often simply shortened to "wireless". Wireless communications is generally considered to be a branch of telecommunications.

It encompasses cellular telephones, personal digital assistants (PDAs), and wireless networking. Other examples of wireless technology include GPS units, garage door openers and or garage doors, wireless computer mice and keyboards, satellite television and cordless telephones.

Wireless operations permit services, such as long range communications, that are impossible or impractical to implement with the use of wires. The term is commonly used in the telecommunications industry to refer to telecommunications systems (e.g., radio transmitters and receivers, remote controls, computer networks, network terminals, etc.) which use some form of energy (e.g. radio frequency (RF), infrared light, laser light, visible light, acoustic energy, etc.) to transfer information without the use of wires. Information is transferred in this manner over both short and long distances.

Wireless communication may be via:

- radio frequency communication,

- microwave communication, for example long-range line-of-sight via highly directional antennas, or short-range communication, or
- infrared (IR) short-range communication, for example from remote controls,

Applications may involve point-to-point communication, point-to-multipoint communication, broadcasting , cellular networks and other wireless networks.

The term "wireless" should not be confused with the term "cordless", which is generally used to refer to powered electrical or electronic devices that are able to operate from a portable power source (e.g., a battery pack) without any cable or cord to limit the mobility of the cordless device through a connection to the mains power supply. Some cordless devices, such as cordless telephones, are also wireless in the sense that information is transferred from the cordless telephone to the telephone's base unit via some type of wireless communications link. This has caused some disparity in the usage of the term "cordless".

In the last 50 years, wireless communications industry experienced drastic changes driven by many technology innovations.

2. Answer the following questions:

1. What kind of devices are defined by the term "wireless"?
2. What services do wireless operations permit?
3. In which ways may wireless communication be implemented?
4. Why should the term "wireless" not be confused with the term "cordless"?
5. What is the reason for drastic changes of wireless communications in the last 50 years?

3. Fill in the gaps with the correct variants:

1. The term wireless is normally used to refer to any type of electrical or electronic operation which is without the use of a "hard wired" connection.

a) supported b) accomplished c) produced d) experienced

2. The distances may be short (a few meters as in television remote control) or very long (thousands or even millions of kilometers for radio communications).

a) included b) implied c) appropriate d) involved

3. Wireless operations services, such as long range communications, that are impossible or impractical to implement with the use of wires.

a) fulfil b) hinder c) supply d) permit

4. The term "wireless" should not be confused with the term "cordless", which is generally used to refer to powered electrical or electronic devices that are able to operate from a power source.

a) feasible b) huge c) portable d) complicated

5. In the last 50 years, wireless communications industry experienced drastic changes by many technology innovations.

a) promoted b) owing c) suggested d) driven

4. Match the words with their definitions:

distance	not sensitive or realistic
remote	transmitting TV or radio programmes
mobility	a set of keys on a computer terminal
cordless	giving information by displaying numbers
digital	easy movement from place to place
drastic	amount of space between two points or places
impractical	a new idea or method

broadcasting	far away in distance or time
keyboard	very significant and noticeable
innovation	having no wires attached to equipment

5. Sum up the text using the following plan:

1. The nature of wireless communication
2. The types of equipment and the ways of radio communication
3. The properties of cordless devices

UNIT 2

CRYSTAL RADIO

1. Read the following text carefully and try to understand its contents:

The **crystal radio receiver** (also known as a **crystal set**) is a very simple kind of radio receiver. It needs no battery or power source except the power received from radio waves by a long outdoor wire antenna.

Simple crystal radios are often made with a few hand-made parts, like an antenna wire, tuning coil of copper wire, crystal detector and earphones. Because crystal radios are passive radio receivers, they are technically distinct from ordinary radios containing active powered amplifiers in many respects. This is because they must receive and preserve as much electrical power as possible from the antenna and convert it to sound power whereas ordinary radios amplify the weak electrical energy "signal" from the radio wave. Today making and operating crystal radios is a popular hobby for many reasons, including:

- Historical and nostalgic significance
- The astonishing results one can get from its utter simplicity
- The challenge of receiving weak distant signals without amplification

Crystal radios can be designed to receive almost any radio frequency since there is no fundamental limit on the frequencies they will receive. The most common crystal radios are designed for the AM Broadcast Band and the 49-meter international short wave band, partly because the radio waves are stronger in those bands. Early radios commonly received spark signals as low as 20 kHz and below. Although crystal radios are designed to detect AM, they also frequently detect FM fairly well which is in the 100 MHz range.

A crystal radio receives programs broadcast from radio stations. Radio stations convert sound into radio waves and send out the waves everywhere. Radio waves travel across the crystal radio antenna all the time. Radio waves make radio wave electricity flow between the antenna wire and the ground wire. This electricity is connected to the crystal radio by the antenna and ground wire. The crystal radio uses a tuner to tune the electricity to receive just one station. The tuner can be as simple as an adjustable one-slider tuning coil that resonates with the antenna because the antenna also acts like a capacitor. Then it uses a crystal detector to convert this radio wave electricity back to sound electricity. The detector can be made from a special rock of galena in a holder. It uses earphones to convert the sound electricity to sound you can hear in the earphones.

2. Fill in the gaps with the correct variants:

1. Simple crystal radios are often made with a few..... parts.

a) manual b) heavy c) hand-made d) composite

2. Crystal radios can be designed to almost any radio frequency since there is no fundamental limit on the frequencies they will receive.

a) propagate b) include c) implement d) receive

3. Radio waves make radio wave electricity flow between the antenna wire and the wire.

a) land b) surface c) ground d) bottom

4. The tuner can be as simple as an one-slider tuning coil that resonates with the antenna because the antenna also acts like a capacitor.

- a) compatible b) adjustable c) coherent d) removable

5. The detector can be made from a special..... of galena in a holder.

- a) lump b) bar c) piece d) rock

3. Organize your thoughts:

1. What kind of power supply does the crystal radio receiver employ?
2. Why are crystal radios technically distinct from ordinary radios?
3. How does radio wave electricity flow in the crystal radio?
4. What is the function of the tuner?
5. Which materials can detectors be made from?

4. Match the words with their definitions :

hand-made	the state of being uncomplicated
distinct	the part of equipment receiving radio signals
amplify	to make a long and clear sound
simplicity	very surprising
tuner	to notice and to find something
resonate	made by someone using their hands
detect	to make something stronger or louder
band	a container into which an object is put
astonishing	a range of frequencies
holder	different or separate from other objects

5. Sum up the text using the following plan:

1. The structure of crystal radio and the principle of its operation
2. The purposes of making and operating crystal radios today
3. The movement of radio waves and the devices by which it is performed.

UNIT 3

TRANSISTOR RADIO

1. Read the following text carefully and try to understand its contents:

A transistor radio is a small transistor-based radio receiver. Historically, the term "transistor radio" refers to a radio that typically receives only the 540–1600 kilocycle AM broadcast band.

The use of transistors instead of vacuum tubes as the amplifier elements meant that the device was much smaller and required far less power to operate than a tubed radio. It also ensured that the audio reception was available instantly, since there were no filaments concerned which could have taken considerable time to heat up. The early typical portable radio was about the size and weight of a lunchbox, and contained several heavy (and non-rechargeable) batteries: one or more so-called "A" batteries just to heat the tube filaments and a large 45- to 90-volt "B" battery to power the cathode and rest of the circuitry. By comparison, the "transistor" could fit in a pocket and weighed half a pound or less and was powered by standard flashlight batteries or a single compact 9-volt battery.

Listeners sometimes held an entire transistor radio directly against the side of the head, with the speaker against the ear, to minimize the "tinny" sound caused by the high resonance frequency of its small speaker enclosure. Most radios included earphone jacks and came with single

earphones that provided only middling-quality sound reproduction due to the bandwidth limitation of AM (up to 4500Hz).

The transistor radio remains the single most popular communications device in existence. Some estimates suggest that there are at least seven billion of them in existence, almost all tunable to the common AM band, and an increasingly high percentage of those also tunable to the FM band. Some receive shortwave broadcasts as well. Most operate on battery power. They have become small and cheap due to improved electronics which has the ability to pack millions of transistors on one integrated circuit or chip. The prefix "transistor" basically now means an old pocket radio; it can be used to refer to any small radio, but the term itself is today somewhat obsolescent, since virtually all commercial broadcast receivers, pocket-sized or not, are now transistor-based.

Transistor radios have declined in popularity with the rise of portable digital audio players, which allow people to listen to the exact music of their choosing and may include a digital radio tuner. This is a popular choice with listeners who are dissatisfied with terrestrial music radio because of limited selection of music or other drawbacks. However, transistor radios are still popular for news, weather, soccer games, horse races and emergency alert applications. In addition, they enjoy widespread popularity in third world nations, where electricity is erratic, extended battery life is paramount and AM is still used as the primary radio band.

2. Answer the following questions:

1. What does the term "transistor radio" mean?
2. Why are transistors preferable to vacuum tubes?
3. What elements did the early typical portable radio contain?
4. How many transistor radio units are in general use now?
5. Why did the contemporary transistor radio become small and cheap?

6. What kind of programmes are popular among the listeners using transistor radios?

7. What is the major reason for decline of transistor radio's popularity?

3. Fill in the gaps with the correct variants:

1. Historically, the term "transistor radio" to a radio that typically receives only the 540–1600 kilocycle AM broadcast band.

a) implies b) suggests c) refers d) adapts

2. The use of transistors ensured that the audio..... was available instantly, since there were no filaments concerned which could have taken considerable time to heat up.

a) conversion b) reception c) modulation d) interference

3. Transistor radios have..... in popularity with the rise of portable digital audio players.

a) developed b) risen c) spread d) declined

4. A digital radio tuner is a popular choice with listeners who are..... with terrestrial music radio because of limited selection of music or other drawbacks.

a) insulted b) dissatisfied c) pleased d) acceptable

5. Transistor radios enjoy widespread popularity in third world nations, where electricity is....., extended battery life is paramount and AM is still used as the primary radio band.

a) erratic b) stable c) continuous d) extreme

4. Match the words with their definitions:

ensure	producing sharp metal sound
--------	-----------------------------

circuitry	living or located overland
flashlight	unpredictable and variable
tinny	fundamental
estimate	readiness for emergencies
alert	to guarantee that something will be done
pack	to collect
terrestrial	alarm signal
erratic	a system of electric circuits
paramount	an opinion based on calculation

5. Sum up the text using the following plan:

1. The advantages of transistors before vacuum tubes
2. The basic components of early transistor radios
3. The contemporary transistor radio units
4. The decline in popularity and use of transistor radios

UNIT 4

GSM – GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS

1. Read the text and try to understand its contents:

GSM is the most popular standard for mobile phones in the world. Its promoter, the GSM association, estimates that 82% of the global mobile market uses the standard. GSM is used by over 2 billion people across more than 212 countries and territories. GSM enables roaming between mobile phone operators to use their phones in many parts of the world. GSM differs from its predecessors in that both signaling and speech channels are digital call quality and so it is considered a second generation mobile system. The GSM logo is used to identify compatible handsets and equipment. The key advantage of GSM systems has been better voice

quality and low-cost alternatives to making calls, such as Short message service (SMS).

Technical details:

GSM is a cellular network which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in 900 MHz or 1800 MHz bands. There are four different cell sizes in GSM network – macro, micro, pico and umbrella cells. The coverage area of each varies according to the implementation environment. It depends on the coverage diameter. For instance, picocells are small cells whose coverage diameter is a few dozen meters, they are mainly used indoors. One of the key features of GSM is the Subscriber Identity Module (SIM), commonly known as a SIM card. The SIM card is a detachable card containing the user's subscription information and phonebook.

GSM security

GSM was designed with a moderate level of security. The system was designed to authenticate the subscriber using an authentication key and response – authentication the user to the network and vice versa.

Communications between the subscriber and the base station can be encrypted. The security model therefore offers confidentiality and authentication. GSM uses several algorithms for security, such as A5/1 and A5/2 for ensuring over-the-air voice privacy. So the key stored on SIM card never sends over the air interface. This is a large security advantage of GSM.

2. Answer the following questions:

1. What's GSM?

2. Is GSM popular in many countries and territories?

3. What does GSM have a logo for?
4. Is GSM a cellular network?
5. What are GSM frequency ranges?
6. Why do the cells have different sizes?
7. What's the coverage area?
8. What's a SIM card?
9. Can we say that GSM has a moderate level of security and why?

3. Fill in the gaps with the correct variants:

1. GSM was to make roaming between mobile phone operators.
a) delivered b) serviced c) designed d) carried
2. GSM is a cellular network, which means that mobile phonesto it by searching for cells in the immediate vicinity.
a) execute b) implement c) transmit d) connect
3. The coverage area of cells coverage diameter.
a) connectsb) influences c) achievesd) depends on
4. Communications between the subscriber and the base station can be
a) encrypted b) moved c) transmitted d) operated

5. The security offers

a) representation b) subscription c) confidentiality d) promotion

4. **Match the synonymic words :**

a logo	to look for
to operate	to fulfil
an authentication	to guarantee
to estimate	a neighbourhood
to search for	a sign
to implement	to function
to ensure	to value
vicinity	an identification

5. **Sum up the text according to the following plan:**

1.The key advantages of GSM

2.The technical details of GSM

3.GSM security

UNIT 5

ELECTRONIC MAIL

1. Read the text and try to understand its contents:

Electronic mail, abbreviated e-mail or email, is a method of composing, sending, and receiving messages over electronic communication systems. Most e-mail systems today use the Internet.

The origins of e-mail

Despite common opinion, e-mail actually predates the Internet; in fact, existing e-mail systems were an important tool in creating the Internet. E-mail started in 1965 as a way for multiple users of a time-sharing mainframe computer to communicate. E-mail was quickly extended to become network e-mail, allowing users to pass messages between different computers. The early history of network e-mail is also murky; the AUTODIN system may have been the first allowing electronic text messages to be transferred between users on different computers in 1966. The ARPANET computer network made a large contribution to the evolution of e-mail.

Growing popularity

As the utility and advantages of e-mail on the ARPANET became more widely known, the popularity of e-mail increased, leading to demand from people who were not allowed access to the ARPANET. A number of protocols were developed to deliver e-mail among groups of time-sharing computers over different alternative transmission systems.

Since not all computers or networks were directly inter-networked, e-mail addresses had to include the "route" of the message, that is, a path between the computer of the sender and the computer of the receivers. E-mail could be passed this way between a number of networks.

Internet e-mail messages consist of two major components:

headers - message summary, sender, receiver, and other information about the e-mail;

body - the message itself

The headers usually have at least four fields:

1. From: The e-mail address of the sender of the message
2. To: The e-mail address of the receiver of the message
3. Subject: A brief summary of the contents of the message
4. Date: The local time and date when the message was originally sent.

Messages and mailboxes

Messages are exchanged between hosts using the Mail Transfer Protocol. Mails can be stored either on the client or on the server side. When a message cannot be delivered, the recipient must send a message back to the sender, indicating the problem.

Spamming and e-mail worms

The usefulness of e-mail is being subjected by two phenomena, spamming and e-mail worms. Spamming is unsolicited commercial e-mail. Because of the very low cost of sending e-mail, spammers can send hundreds of millions of e-mail messages each day over an inexpensive Internet connection. It generates an Information overload for many computer users who receive tens or even hundreds of e-mails each day. E-mail worms use e-mail as a way of replicating themselves into exposed computers. Although the first e-mail worm affected early computers, this problem is today almost entirely confined to the modern operating system.

Privacy problems regarding e-mail

E-mail privacy, without some security precautions, can be compromised because:

- e-mail messages are generally not encrypted;
- e-mail messages have to go through intermediate computers before reaching their destination, meaning it is relatively easy for others to read messages;
- many Internet Service Providers store copies of your email messages on their mail servers before they are delivered. The backups of these can remain up to several months on their server, even if you delete them in your mailbox.

If compare it with other means of communication we can underline that e-mail is very fast, cheap and modern. You can download music and video, send letters and pictures. It's informal.

Of course privacy and security may be problems, but who sends important documents by e-mail?

2. Answer the following questions:

1. What's electronic mail ?
2. Do most e-mail systems use the Internet today?
3. Do we use e-mail to pass messages ?
4. What's the ARPANET?
5. What's the difference between headers and body?
6. What are the main fields of the headers?
7. What's a spammer?
8. What are e-mail security precautions?

3. Complete the following sentences:

1. E-mail started
2. A number of protocols were developed.....
3. Mails can be stored....
4. Hundreds of active spammers.....
5. If compare it with.....

4. Match the synonymic words:

confidentiality	to arise
a message	an itinerary
to pass	to cancel
a route	an element
a precaution	security
to indicate	a letter
a network	an admission
to delete	a warning
an access	to mark

a component	a circuit
an utility	to send
to result	a benefit

5. Explain the meaning of the following words in English:

- 1) a network e-mail
- 2) a message
- 3) an access
- 4) a spamming
- 5) an information overload
- 6) a backup
- 7) an e-mail worm

6. Sum up the text according to the following plan:

1. E-mail as a method of sending and receiving messages
2. A history of early network e-mail
3. Advantages of e-mail using

APPENDIX A

HOW TO WRITE AN ANNOTATION

Аннотирование - это вторичная обработка письменной информации. Для того чтобы зафиксировать краткое содержание произведения, пишется аннотация. Аннотация (Abstract или Summary) - это краткая справка о статье, патенте, книге, справочнике с точки зрения содержания. При аннотировании печатный материал излагается в предельно сжатой форме. Это процесс свертывания (сжатия) информации с очень большим уменьшением по отношению к оригиналу (до 1/10 его части).

Аннотации бывают описательные, справочные, реферативные, рекомендательные и критические. Остановимся лишь на описательных аннотациях, так как умение составлять их необходимо студентам в учебном процессе для обработки печатной информации на иностранном и русском языках и при оформлении записок к дипломным проектам. Специалисты и ученые обязаны уметь писать аннотации к своим научным статьям, докладам для конференций, на книги и т. д.

Описательная аннотация состоит из трех частей:

1. Справка к аннотации. В ней указываются следующие данные: автор; название работы на английском языке, перевод названия; количество страниц, таблиц, рисунков, ссылок на использованную литературу; на каком языке написана работа. Кроме того, для журнала - его название на английском языке, номер и год издания; для патентов - номер патента и страна патентования; для каталогов - фирма, выпустившая данный каталог; для книг, монографий, учебников - название издательства.

2. Основная часть должна отражать перечень наиболее характерных положений по содержанию работы.

3. Заключительная часть. В этой части должен быть общий вывод автора работы или указание на один какой-то вопрос, которому в работе уделено особое внимание, а также рекомендация, для кого данная работа может представлять особый интерес.

Текст аннотации должен быть максимально кратким, от 500 до 1000 печатных знаков.

Основные штампы (key-patterns) аннотаций на английском и русском языках:

CONTENTS	PHRASES
Introduction:	
Title	<i>The title of the text is "...".</i>
Source	<i>The text is taken from a book "..."</i>
Author	<i>The text is written by .../The author of the text is ...</i>
Main body:	
Main idea	<i>The main idea of the text under review is.../... is the main idea./The text is about .../The text deals with a</i>

	<i>problem of ...</i>
Logical parts	<i>The text can be divided into ... logical parts./The text contains ... logical parts.</i>
Description of the first logical part	<i>The first logical part is about It tells us that</i>
Description of the second part	<i>The second logical part deals with ... It describes</i>
Description of the third logical part	<i>The third logical part gives information about</i>
Description of the fourth logical part	<i>The fourth logical part contains information about It contains figures/ tables/ diagrams.</i>
Ending:	
Conclusion	<i>To sum everything up, I can say that</i>
Attitude to the text	<i>I like this text, because it is very informative, important and useful for my future professional activity. I dislike this text, because it is very boring and unnecessary for my future professional activity.</i>

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