МИНОБРНАУКИ РОССИИ

ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ УЧРЕЖДЕНИЕ НАУКИ
ФЕДЕРАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ ЦЕНТР
«КОЛЬСКИЙ НАУЧНЫЙ ЦЕНТР РОССИЙСКОЙ АКАДЕМИИ НАУК»
(ФИЦ КНЦ РАН)

МЕТОДИЧЕСКИЕ УКАЗАНИЯ К ВЫПОЛНЕНИЮ ПРАКТИЧЕСКИХ РАБОТ

По дисциплине Б1.О.05 Иностранный язык в профессиональной сфере

указывается цикл (раздел) ОП, к которому относится дисциплина, название дисциплины

для направления подготовки (специальности) 09.04.02 Информационные системы и технологии

код и наименование направления подготовки (специальности)

направленность программы (профиль) Информационные системы предприятий и учреждений

наименование профиля /специализаций/образовательной программы

Квалификация выпускника, уровень подготовки

Магистр

(указывается квалификация (степень) выпускника в соответствии с ФГОС ВО)

Апатиты

2020

Лист согласования

1 Разработчик:

Ст. преподаватель	УАиМ	_____	С.И. Соколова
должность		подпись	И.О. Фамилия

2 Методические указания рассмотрены и одобрены на заседании учебно-методической комиссии управления аспирантуры и магистратуры 29 июня 2020 г., протокол № 01.

Председатель УМК УАиМ

29.06.2020			Л.Д. Кириллова
дата	подпись		И.О.Фамилия

Пояснительная записка

1. **Методические указания** составлены в соответствии с требованиями федерального государственного образовательного стандарта по образовательной программе высшего образования – программе магистратуры по направлению подготовки 09.04.02_Информационные системы и технологии (профиль Информационные системы предприятий и учреждений), утвержденного приказом Минобрнауки России от 19.09.2017 № 917.

2. **Цель дисциплины (модуля)** «Иностранный язык в профессиональной сфере» - формирование компетенций в соответствии с ФГОС ВО и учебным планом для направления подготовки 09.04.02 «Информационные системы и технологии», профиль Информационные системы предприятий и учреждений.

Задачи:
- расширение словарного запаса общетематической и формирование словаря специальной лексики;
- развитие навыков говорения в виде монологической и диалогической речи;
- развитие и дальнейшее совершенствование умений и навыков всех видов чтения и перевода научно-популярной литературы и текстов по специальности;
- повторение и закрепление грамматического материала, изученного на предыдущих этапах образования,
- развитие умений и навыков письменной речи;
- развитие навыков аудирования.

3. **Требования к уровню подготовки обучающегося** в рамках данной дисциплины.

Процесс изучения дисциплины (модуля) «Иностранный язык в профессиональной сфере» направлен на формирование элементов следующих компетенций в соответствии с ФГОС ВО 09.04.02 Информационные системы и технологии (уровень магистратуры), представленных в таблице 1.

Таблица 1 – Компетенции, формируемые в процессе изучения дисциплины «Иностранный язык в профессиональной сфере»

№ п/п	Код компетенции	Содержание компетенции
1.	УК-4	Способен применять современные коммуникативные технологии, в том числе на иностранном(ых) языке(ах), для академического и профессионального взаимодействия.

4. **Планируемые результаты обучения по дисциплине (модулю) «Иностранный язык в профессиональной сфере».**

Результаты формирования компетенций и обучения представлены в таблице 2.
Таблица 2 – Планируемые результаты обучения

№ п/п	Код компетенции	Компоненты компетенции, степень их реализации	Результаты обучения

1.	УК-4	Компоненты компетенции соотносятся с содержанием дисциплины и компетенция реализуется полностью	**УК-4.1 Знать:** литературную форму государственного языка, основы устной и письменной коммуникации на иностранном языке, функциональные стили родного языка, требования к деловой коммуникации. **УК-4.2 Уметь:** выражать свои мысли на государственном, родном и иностранном языке в ситуации деловой коммуникации. **УК-4.3 Владеть:** практическим опытом составления текстов на государственном и родном языках, опыт перевода текстов с иностранного языка на родной, опыт говорения на государственном и иностранном языках.

Таблица 3 - Перечень практических работ

№ п/п	Наименование практических работ	Количество часов	Наименование темы по табл. 4 РП
1.	IBM PC Architecture.	5	1
2.	Operating Systems. Windows NT	6	2
3.	Compression	6	3
4.	From Bill Gates	5	4
Итого часов		**22**	

<div align="center">**Практическое занятие №1**</div>
<div align="center">Тема: «IBM PC Architecture»</div>

The Invention of the First Personal Computer

In July of 1980, IBM representatives met for the first time with Microsoft's Bill Gates to talk about writing an operating system for IBM's new hush-hush "personal" computer.

IBM had been observing the growing personal computer market for some time. They had already made one dismal attempt to crack the market with their IBM 5100. At one point, IBM considered buying the fledgling game company Atari to commandeer Atari's early line of personal computers. However, IBM decided to stick with making their own personal computer line and developed a brand new operating system to go with. The secret plans were referred to as "Project Chess." The code name for the new computer was "Acorn." Twelve engineers, led by William C. Lowe, assembled in Boca Raton, Florida, to design and build the "Acorn." On August 12, 1981, IBM released their new computer, re-named the IBM PC. The "PC" stood for "personal computer" making IBM responsible for popularizing the term "PC."

The first IBM PC ran on a 4.77 MHz Intel 8088 microprocessor. The PC came equipped with 16 kilobytes of memory, expandable to 256k. The PC came with one or two 160k floppy disk drives and an optional color monitor. The price tag started at $1,565.

What really made the IBM PC different from previous IBM computers was that it was the first one built from off-the-shelf parts (called open architecture) and marketed by outside distributors (Sears & Roebuck and Computerland). The Intel chip was chosen because IBM had already obtained the rights to manufacture the Intel chips. IBM had used the Intel 8086 for use in its Displaywriter Intelligent Typewriter in exchange for giving Intel the rights to IBM's bubble memory technology.

Less than four months after IBM introduced the PC, Time Magazine named the computer "man of the year."

Today the PC is an industry standard. More than 90% of all microcomputers are based on Microsoft's software (Windows) and standardised hardware designed primarily by Intel. This platform or design is sometimes called *Wintel*, a combination of the two product names. But over just a few years, late in the 1980's, the market got behind IBM's standards for PC architecture. Using the Intel 8086 and 8088 processors and Microsoft's operating systems (DOS initially, later Windows), the PC revolution got seriously underway. From that time on, we talked about IBM-*compatible* PCs, and as the years passed, the PC developed to become the triumphant industry standard.

<div align="center">**Практическое занятие №2**</div>
<div align="center">Тема: «Operating Systems. Windows NT»</div>

An **operating system** (OS) is system software that manages computer hardware and software resources and provides common services for computer programs.

Time-sharing operating systems schedule tasks for efficient use of the system and may also include accounting software for cost allocation of processor time, mass storage, printing, and other resources.

For hardware functions such as input and output and memory allocation, the operating system acts as an intermediary between programs and the computer hardware, although the application code is usually executed directly by the hardware and frequently makes system calls to an OS function or is interrupted by it. Operating systems are found on many devices that contain a computer – from cellular phones and video game consoles to web servers and supercomputers.

Early computers were built to perform a series of single tasks, like a calculator. Basic operating system features were developed in the 1950s, such as resident monitor functions that could automatically run different programs in succession to speed up processing. Operating systems did not exist in their modern and more complex forms until the early 1960s. Hardware features were added, that enabled use of runtime libraries, interrupts, and parallel processing. When personal computers became popular in the 1980s, operating systems were made for them similar in concept to those used on larger computers.

In the 1940s, the earliest electronic digital systems had no operating systems. Electronic systems of this time were programmed on rows of mechanical switches or by jumper wires on plug boards. These were special-purpose systems that, for example, generated ballistics tables for the military or controlled the printing of payroll checks from data on punched paper cards. After programmable general purpose computers were invented, machine languages (consisting of strings of the binary digits 0 and 1 on punched paper tape) were introduced that sped up the programming process (Stern, 1981).

OS/360 was used on most IBM mainframe computers beginning in 1966, including computers used by the Apollo program.

In the early 1950s, a computer could execute only one program at a time. Each user had sole use of the computer for a limited period of time and would arrive at a scheduled time with program and data on punched paper cards or punched tape. The program would be loaded into the machine, and the machine would be set to work until the program completed or crashed. Programs could generally be debugged via a front panel using toggle switches and panel lights. It is said that Alan Turing was a master of this on the early Manchester Mark 1 machine, and he was already deriving the primitive conception of an operating system from the principles of the universal Turing machine.

Later machines came with libraries of programs, which would be linked to a user's program to assist in operations such as input and output and generating computer code from human-readable symbolic code. This was the genesis of the modern-day operating system. However, machines still ran a single job at a time. At Cambridge University in England the job queue was at one time a washing line (clothes line) from which tapes were hung with different colored clothes-pegs to indicate job-priority.

An improvement was the Atlas Supervisor introduced with the Manchester Atlas commissioned in 1962, "considered by many to be the first recognisable modern operating system". Brinch Hansen described it as "the most significant breakthrough in the history of operating systems."

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Практическое занятие №3
Тема: «Compression»
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In computer science, **data compression** or **source coding** is the process of encoding information using fewer bits (or other information-bearing units) than a more obvious representation would use, thanks to specific encoding schemes. For example, this article could be encoded with fewer bits if we accept the convention that the word "compression" is encoded as "CP!".

As is the case with any form of communication, compressed data communication only works when both the sender and receiver of the information understand the encoding scheme. For example, this text makes sense only if the receiver understands that it is intended to be interpreted as characters representing the English language. Similarly, compressed data can only be understood if the decoding method is known by the receiver.

One popular encoding scheme that many computer users are familiar with is the ZIP file format. It can be used to reduce the size of an attachment to an e-mail message, facilitating its easier transmission or storage.

Compression is possible because most real-world data are very *statistically redundant*. When represented in its human-interpretable form (or in the case of text to be printed on a computer screen, a simple machine-interpretable form such as ASCII), the data are represented in a non-concise way. For example, the letter 'e' is much more common in English text than the letter 'z', and the likelihood of the letter 'q' being followed by the letter 'z' is rather remote. Analysis of these statistical behaviors can allow the same information to be represented much more concisely.

Further compression is possible if some loss of fidelity is allowable. For example, a person viewing a picture or television video scene might not notice if some of its finest details are removed or not represented perfectly. Similarly, two strings of samples representing an audio recording may sound the same but actually not be exactly the same under detailed computer analysis. Specialized signal processing techniques can take advantage of allowing relatively-minor differences in order to enable representing the picture, video, or audio using fewer bits.

Compression is important because it helps reduce the consumption of expensive resources, such as disk space or connection bandwidth. However, compression requires information processing power, which can also be expensive. The design of data compression schemes therefore involves trade-offs between various factors including compression capability, any amount of introduced distortion, computational resource requirements, and often other considerations as well.

Some schemes are reversible so that the original data can be reconstructed (lossless data compression), while others accept some loss of data in order to achieve higher compression (lossy data compression).

Практическое занятие №4
Тема: «From Bill Gates»

Bill Gates was born in Seattle on October 28, 1955. By age Bill Gates is an American business magnate and computer programmer who is the co-founder of Microsoft, the world's largest PC software company. Since the company's formation in 1975, Gates has held several positions including those of the chairman, CEO and chief software architect. One of the most famous entrepreneurs of the personal computer revolution, he has been consistently ranked among the world's wealthiest people starting from 1987. Born as the son of a successful lawyer, Bill Gates was encouraged from a young age to be competitive. Bright and curious, he developed an interest in computers while in school and wrote his first computer program as a young teenager. After completing his schooling, he enrolled at the prestigious Harvard College though he did not stay there long enough to complete his studies. He dropped out to pursue his passion in computers and teamed up with Paul Allen, a former schoolmate, to form Microsoft. The company proved to be highly successful and within years Gates became an internationally known entrepreneur. Currently the wealthiest person in the world, he is a renowned philanthropist who along with his wife has created the charity organization "Bill & Melinda Gates Foundation". He has also authored and co-authored several books.

Career

Bill Gates and Paul Allen collaborated to found Microsoft (initially called Micro-Soft) in 1975. In the beginning they adapted BASIC, a popular programming language for use on microcomputers. It proved to be a success and they continued to develop programming language software for various systems.

In 1980, the duo was approached by International Business Machine (IBM) with a proposal that Microsoft write the BASIC interpreter for IBM's upcoming personal computer, the IBM PC. Microsoft created the PC DOS operating system which they delivered to IBM in exchange for a one-time fee of $50,000.

Soon Microsoft's operating systems became very popular and the company introduced an operating environment named Windows on November 20, 1985, as a graphical operating system shell for MS-DOS. Over the following years Windows came to dominate the world's personal computer market acquiring over 90% market share. The company saw phenomenal financial success, and being the company's largest individual shareholder, Bill Gates amassed a great fortune.

Microsoft introduced Microsoft Office in 1989. The package integrated several applications like Microsoft Word and Excel into one system that was compatible with all Microsoft products. The success of MS Office gave Microsoft a virtual monopoly on operating systems for PCs.

In the mid 1990s when the use of the internet spread throughout the globe at an alarming speed, Gates focused Microsoft on the development of consumer and enterprise software solutions for the Internet. Windows CE operating system platform and the Microsoft Network were among the innovative solutions developed during this time.

Список рекомендуемой литературы по дисциплине
Основная:
1. Волкова, Т.П., Ломовцева, Н.В. English Grammar for University Students (Грамматика английского языка). Учебное пособие по дисциплине «Иностранный язык» для студентов всех специальностей. - Мурманск: МГТУ, 2012.
2. Рубцова М.Г. Полный курс английского языка. - Москва, Астрель2007, с.543.
3. Кочик Е.И. Английский язык для профессионального общения. Вычислительная техника = English for Professional Communication. Computer Engineering : учеб. пособие / Е.И. Кочик. - Минск : РИПО, 2018. - 228 с. - ISBN 978-985-503-834-51.

Дополнительная:
4. Murphy, Raymond. English Grammar In USE, 4/E,-Cambridge: Cambridge University Press, 2012 -399p.
5. Голицынский Ю.Б. Грамматика: Сборник упражнений. – 7-е изд., испр. и доп. – СПб.: КАРО, 2020. – 192 с. - https://biblioclub.ru/index.php?page=book_red&id=610769
6. Esteras S.R., Professional English in Use: Computers and Internet, Cambridge, 2007 г. - https://biblioclub.ru/index.php?page=book_red&id=439918

7. Качалова К.Н., Израилевич Е.Е. Практическая грамматика английского языка.: В 2-х т., К.: Методика, 2002 г - https://biblioclub.ru/index.php?page=book_red&id=574452

Электронные ресурсы:

1. http://corpus.byu.edu/coca/ - Корпус современного американского английского языка
2. http://lingvopro.abbyyonline.com/en – Электронный словарь ABBYY Lingvo.
3. http://www.macmillandictionary.com/ - Macmillan Dictionary and Thesaurus.
4. http://www.ozdic.com/ - Oxford Collocation Dictionary for Advanced Learners.
5. oald8.oxfordlearnersdictionaries.com – Oxford Advanced Learner's Dictionary.
6. https://www.edx.org/ - Аутентичные онлайн-курсы на английском языке в профессиональной сфере, проводимые университетами мира.
7. http://biblioclub.ru – электронно-библиотечная система "Университетская библиотека онлайн".
8. http:// www.studentlibrary.ru – электронно-библиотечная система «Электронная библиотека технического ВУЗа».
9. http:// elibrary.ru
10 http:// lib.sibnet.ru