А. В. Панова

АНГЛИЙСКИЙ ЯЗЫК

КУРС ИНОСТРАННОГО ЯЗЫКА ДЛЯ СТУДЕНТОВ ДИСТАНЦИОННОЙ ФОРМЫ ОБУЧЕНИЯ

Учебное пособие

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Данное учебное пособие состоит из двух частей: 1) базовый курс иностранного английского языка; 2) профессионально-ориентированный курс иностранного языка. Первая часть содержит теоретический материал по основным грамматическим темам английского языка с тренировочными упражнениями и тестами по каждой теме; разговорные темы; блок чтение на понимание. Вторая часть состоит из 6 модулей (Units), посвященных профессионально значимым темам. Каждый модуль включает в себя лексику, предназначенную для активного усвоения; текст по специальности; упражнения, направленные на развитие речевых навыков студентов.

Пособие рекомендуется студентам дистанционной формы обучения для получения базовых знаний по дисциплине «Иностранный язык» и приобретения навыков письменного перевода и чтения текстов профессиональной технической направленности, а также умения презентовать материал по профессиональной тематике на иностранном языке.

Учебное издание

Панова Александра Викторовна

АНГЛИЙСКИЙ ЯЗЫК

ОГЛАВЛЕНИЕ

Базовый курс иностранного языка.
Part 1. Grammar.
Grammar topic №1

Артикли. (Articles)

Неопределенный артикль (a/an)употребляется:
а) перед исчисляемыми существительными в единственном числе при обозначении принадлежности их к определённому классу (с глаголами to be, to become, to see, to have(got), с оборотом there is, с предлогом as):
He is an engineer. - Он работает инженером. John became a specialist. – Джон стал специалистом.
б) в выражениях, указывающих цену за единицу товара, удельный вес, скорость, частоту:
five dollars a pound – пять долларов за фунт, two miles an hour – две мили в час
в) со словами и в словосочетаниях, обозначающих количество:
a lot of, a few, a little, a hundred, a thousand, a dozen
г) перед существительными в единственном числе, которые определяются такими наречиями, как: quite, such, rather
Helen is quite an inexperienced secretary. – Хелен – совсем неопытный секретарь.
Определенный артикль (the) употребляется:
а) перед существительными в единственном и множественном числе, если либо из предыдущего контекста, либо из информации, имеющейся у собеседников, понятно, о каком конкретном предмете идет речь:
I sent you a letter. I'd like to know your reaction to the letter. – Я посылал Вам письмо. Я хотел бы узнать Вашу реакцию на (это) письмо.
б) перед существительными, являющимися единственными в данных обстоятельствах, либо представляющими один из предметов данного класса:
Close the window. – Закрой окно. The director wants to see you. – Директор хочет Вас видеть.
в) перед прилагательными в превосходной степени и порядковыми числительными:
the best way – лучший способ, the first of January – первое января
г) после словосочетаний one of, some of, each of, most of и обычно после слов all, both.
д) перед названиями рек, морей, океанов, горных гряд и стран из более чем одного слова в названии (state, commonwealth): the Tura, the Black sea
е) в ряде устойчивых сочетаний: in the street, in the morning, the same, the following, the next, the last.
Артикли не употребляются:
а) перед исчисляемыми существительными во множественном числе при обозначении принадлежности их к какому-либо классу:
They are students. – Они студенты   I see cars – Я вижу машины

б) с абстрактными существительными и неисчисляемыми существительными в общем значении:

Time is money – Время – деньги.

в) перед словами next (в значении «будущий») и last (в значении «прошлый»):

next year, last year.

г) с большинством названий улиц, городов, стран: Kreshchatik, New-York, Russia.

д) перед существительными, стоящими перед именами и фамилиями людей: President Putin, Colonel Smith, Mr White, Miss Jane

е) в ряде устойчивых словосочетаний: in time, by bus, by train, by air, at home.

Practice
I. Insert the necessary form of the article (the, a, an, -)
1. My uncle was operated yesterday. He is still in ... hospital. I'm going to ... hospital to see him.
2. ... life will be very different in ... future.
3. ... villages-in this part of ... country near ... Thames are very beautiful.
4. ... Nightingales belonged to ... highest social class of ... England.
5. What do you call ... people of ... China? - ... Chinese.
6. . ... man must do everything possible to save ... environment and ... life on ... planet of Earth.
7. ... English language was brought onto ... British Isles in ... middle of ... fifth century by ... Angles, Saxons and Jutes who came there from ... North of ... Germany.
8. Near ... British Museum you can see the tall building of ... University of London.
9. Statue of Liberty was ... gift of friendship from ... France to ... United States.
10. Give me……book, please

II. Choose the correct variant.
1. There is_____sand in my shoes.
a) —   c) the
b) a   d) an
2. The news was_____very depressing.
a) a   c) —
b) the   d) an
3._____man and_____woman were sitting opposite me.
a) a, the   c) a, a
b) the, a   d) -, -
4. Paris is_____capital of France.
a) the   c) an
b)a   d) -

5. Chinese eat_____rice every day.
a) the   c) a
b) -   d) an
6. There were_____very few people in the shops today.
a) an   c) —
b) a   d) the
7. What is_____longest river in_____world?
a) a, a   c) the, a
b) the, the   d) a, the
8. Did you hear_____noise just now?
a) the   c) a
b) -   d) an
9. What did you have for_____breakfast?
a) -   c) a
b) the   d) an
10. Have you got these shoes in_____size 43?
a) the   c) an
b) a   d) -
11. Ken's brother is in_____prison now for robbery.
a) the   c) a
b) -   d) an
12. Bob is_____seaman. He spends most of his time at
_____sea.
a) a, —   c) an, the
b) the, -   d) a, the
13._____children team a lot from playing.
a) the   c) -
b) a   d) an
14._____giraffe is_____tallest of all animals.
a) the, the   c) an, the
b) a, a   d) -, -
15. We had_____very nice lunch.
a) -   c) the
b)a   d) an
16. We visited _____ Canada and_____United States.
a) a, a   c) the, the
b) -, -   d) -, the
17. Jill has gone to_____hospital to visit Jack.
a) the   c) -
b) a   d) an
18. We took_____ children to the Zoo.
a) -   c) an
b) a   d) the

6

19. It can be dangerous to swim in_____sea.
a) -   c) a
b) the   d) an
20. Have you ever been to_____British Museum?
a) a   c) the
b) -   d) an

Grammar topic № 2.

Множественное число имени существительного
Plural form of the noun.

1. NOUN+S
Bill-bills, puck-pucks, ball-balls
S произносится как [s] после глухих согласных и как [z] после гласных и звонких согласных.
2. NOUN+ES
Если существительное заканчивается на : -s, -ss, -sh, -ch, -x, -tch, -o.
Address-addresses, branch-branches
Окончание –ES после -s, -ss, -sh, -ch, -x, -ce, -se, -ze, -ge произносится как [iz]
3. Y>I+ES
Если существительное оканчивается на Y с предшествующей гласной, то его множественное число образуется по обычному правилу:
Day-days
Если существительное оканчивается на Y с предшествующей согласной, то его множественное число образуется путем прибавления окончания ES с заменой Y на I
4. F>V
Существительные, оканчивающиеся на –f, -fe образуют множественное число с заменой f на v:
Leaf-leaves, life-lives
Искл.: chief-chiefs, roof-roofs, belief-beliefs
5. Исключения из всех правил:
Man-men, woman-women, child-children, fish-fish, foot-feet, goose-geese, tooth-teeth, ox-oxen, mouse-mice, sheep-sheep, deer-deer.
6. Существительные греческого и латинского происхождения, например:
Quantum-quanta (часть-части), thesis-theses (тезис-тезисы), appendix-appendices (приложение-приложения), index-indices (индекс-индексы).
7. Существительные, которые только в единственном числе:
News (новости), works (завод), means (средство), series (ряд, серия), economics (экономика – как учебная дисциплина), mechanics (механика), mathematics (математика)
People (люди, народ), crowd (толпа), police (полиция) обозначает множественное число и согласуется с глаголом во множественном числе

Practice

I. Give the plural forms of the following singular nouns.

A man –

A knife –

An ox –

A sheep –

A city –

A boy –friend –

A woman –

A mouse –

A baby –

A foot –

II. . Choose the correct variant.

1. My_____cars are in the garage.

a) son's-in-law's   c) sons-in-law's

b) sons'-in-laws   d) sons'-in-law

2. Don't bother, I won't listen to your_____will do me no good.

a) advice, it   c) advices, they

b) advise, it   d) advises, they

3. For 30 years now I have been studying my_____. I don't know very much about them.

a) fellow-mens   c) fellows-man

b) fellow-men   d) fellows-men

4. Travellers saw two_____in a distance.

a) oases   c) oasises

b) oasis   d) oaseses

5. The news_____so unexpected at the moment. We don't know what to do about_____.

a) is, it   c) was, these

b) are, them   d) were, it

Grammar topic № 3

Притяжательный падеж имени существительного
The Cases of the Noun.

1. Два падежа – the Common Case (общий падеж)

                The Possessive Case (притяжательный падеж)

2. В общем падеже нет никаких отдельных окончаний.

3. Существительные в притяжательном падеже отвечают на вопрос «Чей?». Падеж образуется путем прибавления к существительному **'s** в единственном числе, а во множественном числе прибавлением только **'.**

Например:

Manager's letter (письмо менеджера), managers' letters (письма менеджеров)

Но!!!! Businessmen's guide – путеводитель для бизнесменов

Women's magazine – женский журнал

Окончание притяжательного падежа произносится по правилам произношения окончаний множественного числа существительных.

4. Притяжательный падеж образуют:

а) существительные, обозначающие одушевленные предметы

my secretary's mistake (ошибка моего секретаря)

б) существительные, обозначающие время и единицы времени

today's letter (сегодняшнее письмо)

в) существительные, обозначающие названия городов, стран и существительные типа:

World, earth, country, city, etc.

The world's best (лучший в мире)

5. Функцию притяжательного падежа выполняет предлог of:

My secretary's mistake = a mistake of my secretary

Practice

I. Transform the phrases into Possessive Case form with ('s)

The flat of my sister –

The food of those dogs –

The hobby of these gentlemen -

The foot of the animal –

The parents of that boy -

II. Give the English equivalents for the suggested word-combinations, using the Possessive case.

Машина Смитов –

Друзья моих родителей –

Птичье гнездо –

Книга Чарли –

Новый собачий поводок –

Зонт того мужчины –

Квартира Тома и Эллис –

Крыша дома –

Кроличья нора –

Лизин учебник -

Grammar topic № 4
Прилагательные и наречия.
Adjectives and adverbs.

1. Прилагательные
а) простые (good, bad, long, easy…)   б) производные (comfortable, irregular..)

Суффиксы	Значение	Пример
-ful	With (наличие)	Fruitful, beautiful
-less	Without (отсутствие)	Fruitless, hopeless
-ive	Quality (качество)	Constructive
-able		Unbelievable
-ible		Horrible
-ous		Famous
-y		Lucky
-ly		Lovely
-ish		Reddish
-en		golden
Префиксы		
il-	Opposite (не-)	illegal
im-		impossible
in-		incorrect
ir-		irregular
un-		uncommon
over-	Too much (сверх-)	overcrowded

2. Степени сравнения

Степень сравнения	Одно- и двусложные прилагательные	Многосложные прилагательные
1. положительная	**Large, hot**	**difficult**
2. сравнительная	**Larger, hotter**	**More difficult**
3.превосходная	**The largest, the hottest**	**The most difficult**

Искл.: good-better- the best

bad-worse-the worst

few=little-less-the least

many=much-more-the most

far-farther (further)- the farthest (the furthest)

Сравнительные конструкции:

1. than   The result of this business trip is much better than the previous one.

2. as…as   This result is as good as that one.

3. not so…as This result is not so good as that one.

4. the (more)…the (less) The more we study, the less we know.

3. Употребление прилагательных

Определение: They work in the **new** office.

Часть сказуемого: Their office is **new**.

4. Наречия

а) простые (well, too, much, very, often..)

б) производные (partly, quickly, hardly…)

в) составные (sometimes, somewhere, anywhere, since then, so far…)

г) совпадающие по форме с прилагательными (fast, hard, late)

д) совпадающие по форме с предлогами (since, after, before)

!!! Некоторые образованные от прилагательных наречия изменяют свой смысл

Hard – тяжелый (трудный), но hardly – едва

High – высокий, но highly – очень, сильно

Near – близко, рядом, но nearly – почти

Late – поздно, но lately - в последнее время

Practice.

I. Open the brackets, using the necessary adjective form.

1. The room is (clean) than it used to be.

2. It was the (bad) time in my life.

3. Peter is as (thin) as his brother.

4. Who is the (old) student in the class?

5. The road becomes (narrow) after some miles.

II. Translate the sentences into English, using the necessary comparative construction.

1. Его машина дешевле, чем моя.

2. Нил короче, чем Днепр?

3. Их дом не такой красивый, как наш.

4. Он такой же воспитанный, как и его отец.

5. Она самая красивая женщина из всех кого я встречал.

Grammar topic № 5
Числительные.
Numerals.

1. Количественные числительные

1 one	11 eleven	21 twenty-one	101 one hundred
2 two	12 twelve	22 twenty-two	and one
3 three	13 thirteen	30 thirty	121 one hundred
4 four	14 fourteen	40 forty	and twenty-one
5 five	15 fifteen	50 fifty	200 two hundred
6 six	16 sixteen	60 sixty	1000 one thousand
7 seven	17 seventeen	70 seventy	1021 one thousand

8 eight 9 nine 10 ten	18 eighteen 19 nineteen 20 twenty	80 eighty 90 ninety 100 one hundred	and twenty-one 3624 three thousand six hundred and twenty-four 1 млн. – one million 1 млрд. – one milliard (англ.), one billion (амер.). Дюжина- dozen Пара-pair (парных предметов) -couple (непарных предметов)

2. Порядковые числительные

1st fist 2nd second 3rd third 4th fourth 5th fifth 6th sixth 7th seventh 8th eighth 9th ninth 10th tenth	11th eleventh 12th twelfth 13th thirteenth 14th fourteenth 15th fifteenth 16th sixteenth 17th seventeenth 18th eighteenth 19th nineteenth 20th twentieth	21st twenty-first 22nd twenty-second 30th thirtieth 40th fortieth 50th fiftieth 60th sixtieth 70th seventieth 80th eightieth 90th ninetieth 100th one hundredth	101st one hundred and first 121st one hundred and twenty-first 1000th one thousandth 1024th one thousand and twenty-fourth

!!! Числительные Hundred, thousand, million и т.д. употребляются в единственном числе в словосочетаниях типа: 2 243 567 – two million two hundred and forty-three thousand five hundred and sixty-seven

Если же эти слова употребляются в сочетании с существительными, то они принимают окончание множественного числа.

Hundreds of companies – сотни компаний, hundred companies – сто компаний

Для разделения разрядов в больших числах используется запятая, а не пробел: 10,256,783

Числа типа 1100,1200 и т.д. обычно произносятся: eleven hundred, twelve hundred.

3. Даты:

1997 – nineteen-ninety-seven, 1900 – ninetee hundred

4. Дроби:

½ - a half, 1/3 – a/one third, 3 3/5 – three and three fifths

В десятичных дробях целая часть отделяется от дробной точкой, а не запятой:

0.03 – o-point-o-three, 5.6. – five-point-six.

5. Употребление числительных

а) подлежащее

Today I've sent them one fax. **Two** were sent yesterday.

б) Часть сказуемого

They will be **ten**. Victor was the **second**.

в) Дополнение

There were three rewards. I was given the **first.**

г) Определение

The **first** letter of credit shall be opened within five days.

Grammar topic № 6
Глаголы to have, to be, to have

В любом языке, и английский не исключение, мы имеем дело с тремя основными состояниями.

Во-первых, мы где-то находимся (или существуем), во-вторых, что-то делаем, и в-третьих, что-то имеем.

В английском языке эти сотояния выражаются глаголами to be, to do, и to have.

Кроме своей основной, глагольной функции - обозначать действие, они могут использоваться как вспомогательные глаголы.

Поэтому для начала запомним 3 формы, т.е. инфинитив (неопределённая форма), прошедшеее время и причастие 2:

 иметь – have – had – had

делать – do – did – done

быть – be – was, (множ) were – been

Глагол **to be** имеет различные формы в зависимости от времени, лица и числа.

Настоящее время: я есть (существую) - I am

ты/вы есть (существуешь/существуете) – you are

 он/она есть (существует) – he (she) is

мы/они есть (существуем, существуют) –we are, they are

Обратите внимание также на то, что, в отличие от русского языка, глагол быть не исчезает и в настоящем времени: I am an eternal student. - Я (есть)

вечный студент. Прошедшее время: я/он/она/ был, была, были - I/he/she was ты(вы)/они/ были - you/we/they were Что касается слова have, то на русский оно часто переводится не как "иметь", а как "у меня (или у кого-то ещё) есть", а то и вовсе опускаеcтя: I have a great idea! - У меня есть великолепная идея! I have a date tomorrow night. - Завтра вечером у меня свидание.

Practice.
I. Translate into English, using the correct form of the verb to be.
1. Я сейчас дома.
2. Вчера он был на работе.
3. Завтра ее не будет дома.
4. Они не были вчера в школе.
5. Где вы? Вы не дома?
6. Он водитель.
7. Он болен? – Да, он сейчас болеет.
8. Его сестры нет в школе.
9. Где мои вещи? – Они были на столе.
10. Она была учительницей.

Grammar topic № 7
Порядок слов в английском предложении
Word order.
!!! Русский язык – свободный порядок слов

Английский язык – фиксированный порядок слов

Типы предложений:

1. Утвердительное предложение (affirmative sentence)

I like playing the guitar

2. Отрицательное предложение (negative sentence)

I don't like skating

3. Вопросительное предложение (interrogative sentence)

Do you often see him there?

4. Побудительное предложение (imperative sentence)

Give me your passport, please.

Обычный порядок слов для типов №1 и №2:

Обстоятельство (времени)	**Подлежащее**	**Сказуемое**	Косвенное Обстоятельство и прямое дополнение

I sent the letter **by fax**

He left for Paris **two months ago**=**Two months ago** he left for Paris

Косвенное дополнение (отвечает на вопрос **кому?**) стоит в предложении перед прямым дополнением (отвечает на вопросы **кого? что?**)

Give him the documents.

I often give my son some pocket money

Косвенное дополнение может стоять в предложении и после прямого дополнения, если оно имеет при себе предлог **to:**

Give the documents to him.

I often give some pocket money to my son.

Местоимения в роли

Подлежащего		и	дополнения
I-me	**I** broke the glass		Do you love **me**?
You-you	**You** look pretty nice today		I want **you** to come here
We-us	**We** knew that before		Did he invite **us**?
They-them	**They** prefer candies		I will write **them**
He-him	**He** is a nice guy		Do you know **him**?
She-her	**She** can cook very well		They made **her** sleep
It-it	**It**'s very important		I have just said **it**

*** В побудительном предложении порядок слов такой же, только отсутствует подлежащее:

Take bus number four to get there.

Let's go to the disco tonight.

Вопрос и отрицание

1. В английском вопросе имеется либо инверсия (подлежащее и сказуемое меняются местами), либо перед подлежащим ставится вспомогательный глагол.

1) глагол **to be** в любой из своих форм (**am, is, are, was, were**)

2) глагол **to have (have, has, had)** в составе формы Perfect или устойчивого выражения **to have got**

3) любой модальный глагол **(can, could, will, would, shall, should, must, may, might, ought to)**

Для остальных глаголов используются вспомогательные глаголы:

Do /Does/ Did

2. При отрицании частица not добавляется к тому же самому глаголу, который выносится вперед при вопросе:

We **are** happy. We **are not** happy.

Practice.

I. Choose the correct variant of the word order in the sentences.

1. airport-10 p.m.-you'll-the-at-at-arrive

      a) You'll arrive at the airport at 10 p.m.

b) You'll arrive at 10 p.m. at the airport

c) At the airport you'll arrive at 10 p.m.

2. often-the cinema-The Milnes-to-go

a) The Milnes often go to the cinema

b) The Milnes go to the cinema often

c) Often to the cinema go the Milnes

3. drink-coffee-I-usually-strong-don't

a) I don't drink strong coffee usually

b) I usually don't drink strong coffee

c) I don't usually drink strong coffee

4. the theatre-go-often-very-we-to

a) We go to the theatre very often

b) We very often go to the theatre

c) Very often we go to the theatre

5. tell-didn't-me-you-the truth-why?

a) Why you didn't tell me the truth?

b) Why didn't you tell the truth me?

c) Why didn't you tell me the truth?

6. round-at-table-wooden-they-a-large-sat

a) They sat at a round large wooden table

b) They sat at a large round wooden table

c) They sat at a large wooden round table

7. cigarettes-his-give-him

a) Give him his cigarettes

b) His cigarettes give him

c) Give his cigarretes him

8. doing-men-what-those-are?

a) What those men are doing?

b) What are doing those men?

c) What are those men doing?

9. the novel-much-I-very-liked

a) I liked very much the novel

b) I liked the novel very much

c) I very much liked the novel

10. the news-yesterday-saw-television-I-on.

a) I saw on television the news yesterday

b) I yesterday saw the news on television

c) Yesterday I saw the news on television

Grammar topic № 8
Времена действительного залога
The Tenses of the Active Voice

Понятие времени не следует смешивать с грамматическими временными формами. Понятие времени знакомо всем. Оно не зависит от языка. Грамматические же времена представляют собой формы, употребляемые для выражения временных отношений. Грамматические времена различны в различных языках, они могут указывать, относится ли действие, деятельность, состояние к прошлому, настоящему или будущему. Грамматические времена могут также выражать законченность или незаконченность действия, его длительность и протяженность.

Система глагольных времен в английском языке не только выражает действие в настоящем, прошедшем и будущем времени, но и выражает отношение действия к данному моменту времени или другому действию.

В систему глагольных времен входят времена Indefinite, Continuous, Perfect, Perfect Continuous, Основное значение этих времен следующее:

1. Времена не определенные (Indefinite Tenses) обозначают факт совершения действия в настоящем, прошедшедшем или будущем.)

2. Времена длительные (Continuous Tenses), обозначают действие в процессе его протекания в данный момент в настоящем, прошедшем или будущем.)

3. Времена совершенные (Perfect Tenses) обозначают действие, которое совершилось к данному моменту в настоящем, прошедшем или будущем.

4. Времена совершенные длительные (Perfect Continuous Tenses) обозначают действие, которое продолжалось некоторый период времени до наступления данного момента и, возможно, продолжается и после данного момента в настоящем, прошедшем или будущего

Каждая группа времен в английском языке имеет свою модель образования данного времени, куда входят вспомогательные глаголы (такие как DO, DOES, DID, BE, HAVE, HAS, HAD, WILL,SHALL) и определенные формы смысловых глаголов. Вспомогательные глаголы необходимы, чтобы указать время в вопросительных и отрицательных предложениях, а также в некоторых формах утвердительных предложений.

Рассмотрим временные модели в таблице. Для этого введем следующие условные обозначения:

V – глагол в неопределенной форме (инфинитив) – в англ. Verb - глагол

V3 – третья форма глагола в таблице неправильных* глаголов

V2 – вторая форма таблицы неправильных глаголов

Ved – глагол с окончанием ed служит для образования форм прошедших времен для правильных** глаголов

В системе английских глаголов существует понятие правильных и неправильных глаголов:

*неправильные глаголы – образуют формы прошедшего простого и формы совершенных времен путем изменения корневой гласной или корня слова. (см. таблицу неправильных глаголов)

**правильные глаголы – образуют формы прошедшего простого и формы совершенных времен путем добавления окончания или суффикса ed к инфинитивной форме глагола.

Таблица времен английского языка активного залога.

	Indefinite (простое)	Continuous (длительное)	Perfect (совершенное)	Perfect Continuous (совершенное длительное)
Present (настоящее)	**V/ Vs (3 лицо ед.число) DO / Does**	**Am Is + Ving are**	**Have Has (3 лицо ед.число) + Ved/V3**	**Have/has + being +Ved/V3**
Past (прошедшее)	**Ved/V2 Did**	**Was Were + Ving**	**Had+Ved /V3**	**Had +being+ Ved/V3**
Future (будущее)	**Will/Shall (1 лица ед. и мн. числа) + V**	**Will/shall +be +Ving**	**Will/shall +have +Ved/V3**	**Will/shall +have +being +Ved/V3**

Practice.
I. Choose the correct variant.
1 .When Mark arrived, the Johnsons_____dinner, but stopped in order to talk to him.
a) were having c) had been having
b) had d) was having
2. While Tom_____a book, Marhta_____TV.
a) was reading, watched c) was reading, was watching
b) read, watched d) read, was watching
3. The food that Ann is cooking in the kitchen_____delicious.
a) is smelling c) smelt
b) smells d) will smell
4. We called our friends in London yesterday to tell them about the reunion that we_____.
a) will plan c) plan
b) were planning d) have planned
5. Catherine is studying law at the university, and so_____ Nick.
a) is c) was
b) does d) were

6.1 feel terrible. I think I_____to be sick.
a) will   c) am going
b) go   d) will be going
7. My colleagues usually_____four days a week, and tills
week they_____five days.
a) work, work   c) are working, are working
b) are working, work   d) work, are working
8. It_____outside; 1 do not like to walk in such weather.
a) rains   c) is raining
b) is rain   d) is rained
9. I_____a very difficult day tomorrow. I need to prepare
for the exam.
a) will have   c) have
b) am having   d) would have
10. At 10 o'clock in the morning on Wednesday Tom_____
a delegation in the office.
a) will receive   c) will be receiving
b) is receiving   d) would receive
11. Although the sun was shining, it was still cold, because it _____hard for
two hours.
a) had been raining   c) had rained
b) was raining   d) is raining
12. She_____at the parcel long enough, before she_____
that it was for her brother.
a) had been looking, had understood
b) had been looking, understood
c) was looking, understood
d) was looking, had understood
13.I_____to the cinema but my friend persuaded me to stay.
a) am not going   c) did not go
b) was going   d) had been going
14. We were good friends, we_____each other for years.
a) had known   c) were knowing
b) had knowing   d) know
15. We were extremely tired at the end of the journey. We _____for more than
24 hours.
a) had travelled   c) had been travelling
b) were travelling   d) travel
16. How long_____this book? How many pages of this
book_____?
a) have you been reading, have you been reading
b) have you read, have you read
c) have you read, you read
d) have you been reading, have you read

17. We always go to Saint Petersburg for our holidays. We _____there for years.
a) have been going   c) go
b) are going   d) were going
18. I have lost my key again. I_____things. I lose things too often.
a) always lose   c) have always lost
b) am always losing   d) was always losing
19. The economic situation is already very bad and it_____ worse.
a) is getting   c) got
b) gets   d) would be getting
20. What time_____your friend_____tomorrow?
a) will arrive   c) will be arriving
b) is arrived   d) will arriving

Grammar topic № 9
Времена страдательного залога
The Tenses of the Passive Voice

При употреблении термина "страдательный залог" для обозначения Passive Voice в английском языке следует иметь в виду, что значение и употребление Passive Voice в английском языке шире, чем значение и употребление страдательного залога в русском языке.

Основная формула образования «страдательного залога» to be + Ved/V3

Таблица времен пассивного залога

	Indefinite (простое)	Continuous (длительное)	Perfect (совершенное)	Perfect Continuous (совершенное длительное)
Present (настоящее)	**Am Is + Ved/V3 are**	**Am Is +being + Ved/V3 are**	**Have Has (3 лицо ед.число) +been+ Ved/V3**	**Не существует**
Past (прошедшее)	**Was Were + Ved/V3**	**Was Were +being+ Ved/V3**	**Had+been+ Ved /V3**	**Не существует**

Future (будущее)	Will/Shall (1 лица ед. и мн. числа) +be+ Ved/V3	Не существует	Will/shall +have +been+Ved/V3	Не существует

Формы глагола в страдательном залоге образуются при помощи вспомогательного глагола **to be** в соответствующем времени, лице, числе и причастия II смыслового глагола.

В страдательном залоге нет времен Perfect Continuous, Future Continuous и Future Continuous in the Past.

Отрицательная, вопросительная и вопросительно-отрицательная формы страдательного залога образуются по тем же правилам, что и соответствующие формы действительного залога, а именно:

1) В отрицательной форме частица not ставится после вспомогательного глагола: The book is not written.

При сложной форме вспомогательного глагола частица not ставится после первого вспомогательного глагола: The book has not been written.

Сокращенные формы образуются аналогично сокращенным формам глагола в действительном залоге: The book isn't written, the book hasn't been written.

2) В вопросительной форме вспомогательный глагол ставится перед подлежащим: Is the book written?

При сложной форме вспомогательного глагола перед подлежащим ставится первый вспомогательный глагол:

Has the book been written?

3) В вопросительно-отрицательной форме вспомогательный глагол (или первый вспомогательный глагол—в сложной форме) ставится перед подлежащим, а частица not после подлежащего: Is the book not written? Has the book not been written?

При сокращенной вопросительно-отрицательной форме частица not ставится перед подлежащим и сливается с вспомогательным глаголом, причем буква o в слове not выпадает как в написании, так и в произношении.

Isn't the book written? Hasn't the book been written?

Значение и употребление времен глагола в страдательном залоге такое же, как и времен глагола в действительном залоге.

В английском языке в страдательном залоге употребляются переходные глаголы, а также некоторые непереходные глаголы.

Примеры на переходные глаголы в страдательном залоге:

While a current is flowing through a wire, the latter is being heated.

By the middle of the nineteenth century about sixty different dements had been discovered.

The delegates will be met at the station.

Когда ток проходит по проволоке. последняя нагревается.

К середине XIX столетия было открыто около 60 различных элементов.

Делегатов встретят на вокзале.

Дополнение в предложении с глаголом-сказуемым в страдательном залоге употребляется с предлогом by или with. Это дополнение соответствует русскому дополнению в творительном падеже без предлога.

Дополнение с предлогом by обозначает лицо или действующую силу;

The propeller theory was worked out by N. E. Zhukovsky.

Теория воздушного винта была разработана Н. Е. Жуковским.

The drying of materials is effected by a high-frequency current.

Сушка материалов производится током высокой частоты.

Дополнение с предлогом with выражает орудие действия: with a pencil карандашом, with a pen пером, with a file напильником.

Shafts are turned with cutters. -- Валы обтачиваются резцами.

Practice.
I. Choose the correct variant.
1. The famous actress_____now for the "HELLO" magazine.
a) is interview   c) is being interviewed
b) interview   d) was interviewed
2. All tickets_____before we got in the theatre.
a) were sold   c) are sold
b) have sold   d) had been sold
3. Students_____next Friday.
a) will be examined   c) are examined
b) will examine   d) have been examined
4. "A Farewell to Arms"_____in 1929.
a) was published   c) published
b) were published   d) has published
5. The dinner_____by five o'clock tomorrow.
a) will be served   c) will have been served
b) is served   d) will serve
6. He_____to tidy the garage.
a) was helped   c) are helped
b) were helped   d) have helped
7. She_____practicing the piano yesterday.
a) is heard   c) hear
b) was heard   d) hears
8. The jam sandwiches_____with white bread.
a) made   c) are made
b) makes   d) is made

9. Most children_____strongly_____their parents.
a) are, influencing on   c) has, influence with
b) are, influenced by   d) have, influenced by
10. All information_____to me, before I found her address.
a) had given   c) was given
b) had been given   d) is given
11. The Loch Ness monster_____to exist.
a) is told   c) is said
b) tells   d) says
12. About 50 people_____to the party yesterday.
a) were invited   c) was invited
b) invite   d) are invited
13. Trained dogs_____by the police to find drugs.
a) use   c) used
b) are using   d) are used
14. Lisa is at the beauty parlor. She is_____.
a) having her nails painted
b) had her nails
c) painting her nails
d) painted her nails
15. Mike _____ to clean his room.
a) was make   c) was made
b) are made   d) is being made
16. Oxford_____by Manchester United in the Cup Final
yesterday.
a) beaten   c) has been beaten
b) was beaten   d) was beated
17. Fruit juice_____by her over the white table cloth.
a) had spilt   c) had been spilled
b) spilled   d) has been spilt
18. The book_____by the lecturer.
a) was referred   c) has referred
b) referred to   d) was referred to
19. Mr. Smith_____the letter_____.
a) make, typed   c) has, typed
b) have, typed   d) is, typed
20. Such a dress_____.
a) can sat down in   c) can't sit down in
b) can sit down in   d) can't be sat down in

Grammar topic № 10
Модальные глаголы и их эквиваленты.
Modal verbs and their equivalents.

Модальные глаголы выражают не действие, а отношение говорящего к действию.

Особенности модальных глаголов:

1. Не имеют формы инфинитива (с частицей to), причастия и герундия (can)

2. Не изменяются по лицам и числам (без окончаний). (she must)

3. Вопросительные и отрицательные формы предложений с модальными глаголами образуются без вспомогательных глаголов, роль вспомогательных глаголов при этом играют сами модальные глаголы. (May I come in? – No, you may not)

4. После модальных глаголов следует инфинитив без частицы to (I can swim) Кроме ought to (всегда с частицей to), а глаголы need, dare могут быть как с частицей, так и без нее.

Модальный глагол	перевод	значение	пример
must	Должен	1.приказание 2.запрещение 3.сильная уверенность	1.You must do it – Вы должны это делать. 2.You mustn't do it – Вы не должны этого делать 3. It must be Mr Smith – Это, должно быть, м-р Смит.
Shall	------	1.сильная решимость 2.получение инструкций 3.формулировка обязательств	1. We shall win! – Мы выиграем! 2. Shall I come out? – Мне выйти? 3. The seller shall sell and the buyer shall buy… - продавец продает, а покупатель покупает….
Should	Следует	1. совет 2. упрек	1. You should see a doctor – Тебе следует сходить к доктору. 2. You shouldn't drink so much – Тебе не следует пить так много.

Ought to	Следует	1. совет 2. упрек	1. You ought to attend lectures – Тебе следует посещать лекции. 2. You ought not to have visited Mr Brown – Не следовало тебе идти к м-ру Брауну.
Need	Нужно	1.отсутствие необходимости что-то делать 2.разрешение не делать что-либо 3.потребность	1. You needn't send the letter. I have already done it.-Вам не нужно отправлять письмо. Я уже это сделал. 2.You needn't do it – Это можно не делать. 3. I need money – Мне нужны деньги.
Can	Мочь	1.умение, способность 2.разрешение 3.запрещение 4.просьба 5.вероятность	1. Can you type? – Ты умеешь печатать? 2. You can come at 6 o'clock – Можете прийти в 6 часов 3. You can't do this – Нельзя это делать 4. Can you tell me about it? – Скажи, мне пожалуйста, об этом. 5. It can be him – Может быть, это он.
Could	Мог Мог бы	1.умение, способность 2.вежливая просьба 3.вероятность	1. He could type – Он умел печатать 2. Could you give me a favor? – Не могли бы Вы оказать мне услугу? 3. She couldn't have done it. - Не может быть, чтобы она это сделала.
May	Можно Возможно	1.разрешение 2.запрещение 3.просьба	1. You may go – Можете идти 2. You may not smoke

		4.вероятность	here – Нельзя здесь курить 3. May I see your passport? – Покажите Ваш паспорт 4. He may be ill – Он, возможно, заболел.
Might	Мог Возможно	1.разрешение 2.вероятность 3.вежливая просьба 4.укор	1. He asked the doctor if he might use his phone – Он спросил у врача, можно ли ему воспользоваться его телефоном. 2. I might have stayed at home – Я мог остаться дома. 3. Might I speak a word to you? – Можно мне с вами поговорить? 4. You might be more attentive – Ты мог бы быть более внимательным
will	-------	1.волеизъявление 2.просьба, приглашение 3.не совершение ожидаемого действия	1. We will help you – Мы (охотно) поможем Вам. 2. Will you have a cup of tea? – Не желаете ли чашечку чая? 3. The knife won't cut – Нож не режет.
would	-------	1.волеизъявление 2.просьба, приглашение 3.не совершение ожидаемого действия	1. I said that we would help you. – Я сказал, что мы (охотно) поможем Вам. 2. Would you help me? – Помогите мне, пожалуйста. 3. The window wouldn't open – Окно не отворялось.

Модальные эквиваленты

Модальные эквиваленты используются как полные или частичные заменители модальных глаголов обычно в том случае, если использование формы модального глагола невозможно по грамматическим правилам английского языка, либо форма, которую необходимо использовать отсутствует для данного модального глагола.

Модальный эквивалент	Его модальный глагол	перевод	Пример
To be to	must	Должен (договоренность)	You are not to do it! – Вам нельзя этого делать!
To have to	must	Должен (вынужден)	She has to sign the contract – Она вынуждена подписать контракт
To be able to	Can, could	Мочь, быть способным	We are not able to fly! – Мы не можем летать!
To be allowed to	May, might	Можно, разрешено	You are not allowed to come late! – Тебе не разрешается приходить так поздно!

Practice.

I. Choose the correct variant.

1. My sight is getting worse. Next year, I am afraid, I_____
read without glasses.

a) cannot   c) could not
b) may not   d) will not be able to

2. Police, firefighters, newspaper reporters and radio broadcasters _____work on holiday in the USA.

a) must   c) might
b) could   d) should

3._____you_____get up early to meet the delegation at
the airport?

a) Did, have to   c) Have, had to
b) Had, to   d) Must, have to

4. Teenagers who commit crimes_____be treated as adults
and sentenced to significant punishment.
a) would   c) should
b) ought   d) have
5. The Senate and the House of Representatives_____approve a bill for it to
become a law.
a) had to   c) was to
b) should   d) must
6. When Frank was 13, he_____run 100 metres in 15 seconds.
a) must   c) can
b) could   d) could have
7. Janet and Tom did not want to come with us at first time but in the end
we_____persuade them.
a) were able to   c) might
b) should   d) could have
8. The baseball match was cancelled last week. Craig_____
anyway because he was ill.
a) must not play   c) should not play
b) could not have played   d) cannot play
9. You have got plenty of time. You_____hurry.
a) must not   c) need not
b) should not   d) may not
10. According to the contract, the goods_____at the port
at the end of the week.
a) will arrive   c) should arrive
b) are to arrive   d) could arrive
11. The dog started to bark loudly, it_____traces.
a) can have found   c) must find
b) may have found   d) may find
12. There is a child sleeping in the next room. You_____be
so noisy.
a) ought not   c) have not to
b) should not   d) do not have
13. Knock again. They_____not have heard the first time.
a) was   c) need
b) ought   d) might
14. My friends_____tomorrow in the cafe.
a) are to meet   c) ought to meet
b) should meet   d) were to meet
15.1 cannot find my umbrella: I have a feeling I_____have
left it on the bus.
a) can   c) might
b) ought   d) may

16. You have been reading for four hours. This book_____
very interesting.
a) must have been   c) should be
b) can be   d) might have been
17. From what you tell me it sounds as if he_____to see a
doctor as soon as possible.
a) was able to   c) should
b) ought   d) must
18. James_____take an educational course next September. It is a required
course.
a) has to   c) might
b) may   d) need
19. The dog behaves strangely. It_____its master.
a) could lose   c) should have lost
b) must lost   d) must have lost
20.1 do not think you_____go out without a raincoat on;
It looks like rain.
a) must   c) should
b) ought   d) need

Speaking topics.
Уважаемые студенты, просмотрите предложенные слова и выражения, попытайтесь их запомнить, прочитайте текст, переведите (если нужно воспользуйтесь словарем), на основе данного текста составьте рассказ о себе. Рассказ о себе вы представите в режиме on-line своему тьютору. Желаю удачи!
I. Don't miss the chance to learn the words by- heart.
    1. Words and word combinations to learn by-heart:
    They say – говорят, что
    To be done well –сделано хорошо
    I follow – я следую
    I would like to introduce myself – мне бы хотелось представить себя
    An average sized Russian family –среднестатистическая русская семья
    Attractive –привлекательный
    Fleeting –текучий, быстротечный
    Depend on – зависеть от
    I think – я думаю, что
    I believe – я полагаю, что
    Star sign – знак зодиака
    Influence – влияние, влиять
    Trust – доверять
    As for me – что касается меня
    I'm fond of – я обожаю

Traits of character – черты характера

According to (the scientists, my parents…) – по мнению (ученых/ родителей)

Through I'm rather busy / nervous/ etc. – несмотря на то, что я очень занята/ нервничаю/ и т.д.

In my leisure time – в мое свободное время

To my mind – с моей точки зрения

II. Read the text. Translate. Make up your own text about yourself on the base of this text.

About myself.

They say that if you want something to be done well, do it yourself. So I follow this wise saying and would like to introduce myself. I believe that it isn't an easy thing to speak about yourself as it's hard to have a look at yourself from aside but at the same time you know everything about yourself better than somebody else.

My name is Elena Protasova. I live in Tyumen. I am 19 years old. My family is an average sized Russian family: it consists of my father, mother, elder brother and me. I am rather attractive girl, I think. I like different clothes style. Everything depends on my mood.

To my mind our life goes so fast that sometimes we don't notice how fleeting it is. For instance I didn't notice how eighteen years of my life have passed. I feel like it was yesterday when I went to school for the first time, but this year I am a University student of Tyumen State oil and gas University. It's unbelievable but it is true.

I think that my star sign can tell you a lot about me, my inside world, soul and character. I believe that stars influence our fate and character, though I don't trust daily horoscopes. I was born under the zodiac sign of Taurus. Stars affirm that Tauruses are active, pragmatic, clever and serious people. But at the same time, they are dreamy, kind-hearted and demanding. May be that's why? I've chosen the profession of an engineer.

Once I read in a magazine that some scientists are sure that they can say what kind of person you are if they know what your favourite colour is. As for me I'm fond of purple and blue colours. According to the scientists' words I'm temperamental, successful, thoughtful and quite. And I can say that I agree with all these traits of my character, though some of them are more clearly expressed in me, but others are less.

Though I'm rather a busy girl and I don't have much free time I always try to find spare time for my hobbies and interests because I have a lot of them. In my leisure time I like to listen to my favourite music, but what kind of music I listen always depends on my mood. If I'm full of joy I like to listen to pop music, but if I'm sad I prefer hard music. I believe that music awakens the best feelings in my soul and high emotions. Also I like to read various books. To my mind

reading is very useful because books enrich our experience with that of other people. Besides books help me to continue my own education and I disagree with the people who think that a tempo of modern life is too fast to waste time on reading. But most of all I like traveling because in my opinion it is always interesting to discover new things, different ways of life, to meet various people, to try diverse food, to listen to different music, etc.

And in conclusion I'd like to say that I like being me. And I hope that everybody who knows me likes me with all my positive and negative features of character.

III. Read the text. Translate it. Using the information from this text and additional information from the other resources prepare the reports with the presentations on the suggested topics.

Уважаемые студенты, прочитайте текст, переведите (если нужно воспользуйтесь словарем), подготовьте устный доклад по предложенным темам. Обсуждение докладов состоится в режиме on-line Skype.

The United Kingdom of Great Britain and Northern Ireland

Темы докладов (Reports' topics):

1. **Stonehenge**
2. **The Sights of London**
3. **London Underground**
4. **Parks of London**
5. **The Royal Family**

The United Kingdom of Great Britain and Northern Ireland

The United Kingdom is situated in the north-west coast of Europe between the Atlantic Ocean on the north-west and the North Sea on the east.

The U. K. includes Great Britain and Northern Ireland.

Great Britain, the largest island in Europe, contains England, Scotland and Wales.

The United Kingdom has an area of 244,000 square kilometres (94,249 square miles). The capital of the country is London. English is the official language.

The population of the U. K. is nearly 60 million people. The population lives mostly in towns and cities and their suburbs. Four out of every five people live in towns. Over 46 million people live in England. Over 3 million - in Wales. A little over 5 million - in Scotland. About 1.5 million- in Northern Ireland. London's population is over 7 million people. The British nation consists of the English, the Scots, the Welsh and the Irish. There are many people of different nationalities and races in the United Kingdom.

The climate of Great Britain is mild. It is not too hot in summer or too cold in winter. It often rains in England. Rain falls in summer and in winter, in autumn

and in spring. Snow falls only in the north and west of the country. The surface of England and Ireland is flat, but Scotland and Wales are mountainous. Many parts of the country have beautiful villages. There are many rivers in Great Britain. The main river is the Thames. Many ships and barges go up and down the river. The longest river is Severn. It is 350 kilometres long.

There are many universities, colleges, libraries, museums and theatres in the country. The most famous universities are Cambridge University, Oxford University, Glasgow University.

The U. K. is a parliamentary monarchy. The British Parliament consists of two Houses: the House of Lords and the House of Commons. The Prime Minister is the head of the government.

The United Kingdom has some mineral resources. Coal and oil are the most important of them. The United Kingdom is one of the world's most industrialized countries. The main industrial centres are Sheffield, Birmingham and Manchester. The largest cities of the country are London, Birmingham, Cardiff, Manchester, Glasgow, Belfast, Dublin.

Agriculture takes an important sector in economy of the country. The British people grow wheat, fruit, vegetables, oats.

Reading comprehension.
Глоссарий. (Glossary). Text "Full Breakfast"

Don't lose the chance to enrich your vocabulary. (Не упустите шанс пополнить Ваш словарный запас**)**

1. Full breakfast – комплексный завтрак (полноценный завтрак)
2. starter - закуска
3. cereal – каша (из злаков)
4. main course – основное блюдо (главное блюдо)
5. bacon and eggs – яичница с беконом
6. fry-up – блюдо (на завтрак)
7. continental breakfast – легкий завтрак
8. condiments – приправы, специи
9. brown sauce – соевый соус
10. black pudding – кровяная колбаса
11. baked beans –тушеная фасоль
12. bubble and squeak - жаркое из мяса, капусты и картофеля
13. chips - длинные ломтики картофеля, обжаренные во фритюре
14. fried egg - яичница-глазунья
15. poached egg – яйцо пашот
16. scrambled egg – яичница-болтунья
17. egg in a basket – яйцо в «мешочке»

18. French toast - французский тост (кусочек хлеба, смоченный в молоке и яйце и затем обжаренный; подаётся с сахаром, фруктами, сладким сиропом)
19. muffin - маффин, оладья
20. scone - ячменная или пшеничная лепёшка
21. hash browns - картофельные оладьи (вареный картофель мелко нарезают, перемешивают с луком и пекут на сковороде)
22. kippers - киппер, копчёная селёдка; копчёная рыба
23. mushrooms - грибы
24. oatcake - овсяная лепёшка
25. pancake – блин, оладья
26. sautéed potatoes – картофель соте (поджаренный на масле)
27. potato bread/ tattie scone - картофельные лепешки
28. sausages - сосиски
29. scrapple - свиной студень с добавлением кукурузной муки
30. Laverbread - блюдо из жареных красных водорослей
31. potato waffles – картофельные вафли
32. white pudding – колбаски из жидкого фарша без добавления крови
33. potato cakes – картофельные котлеты
34. leftover – остатки еды
35. grits - овсяная крупа; овсяная мука грубого помола

II. Read the text "Full breakfast". Translate it. Be ready to answer the questions after the text.

A full breakfast is a meal that consists of several courses, traditionally a starter (fruit juice, prunes, grapefruit), cereal, a main course, tea with milk, toast and (in England) marmalade.

Variations are possible in an unlimited number.

"Full breakfast" also refers to the main course, a traditional cooked dish, typically and originally eaten at breakfast, though now often served at other times during the day. Common alternative names for the dish include bacon and eggs, or the fry-up.

The full breakfast traditionally comprises several fried foods, usually including bacon and eggs, and is popular throughout the British Isles and other parts of the English-speaking world. The name "Bacon and eggs" was popularized by Edward Bernays in the 1920s. To promote sales of bacon, he conducted a survey of physicians and reported their recommendations that people eat hearty breakfasts. He sent the results of the survey to 5,000 physicians, along with publicity touting bacon and eggs as a hearty breakfast.

Various parts of the United Kingdom have their own variants of the full breakfast, including the full English breakfast, full Scottish breakfast, "full Welsh breakfast" and the Ulster fry.

Tradition

The term "full breakfast" for a substantial meal of several courses including a cooked main course is used to differentiate it from the simpler continental breakfast of tea, milk or coffee and fruit juices with croissants or pastries.

All-day breakfast

"To eat well in England you should have breakfast three times a day."

—W.   Somerset   Maugham

Many cafés and pubs serve the meal at all hours as an "all-day breakfast". It can be accompanied by orange juice and tea or coffee or, in a pub, an alcoholic drink.

Typical ingredients

The ingredients of a fry-up vary according to region and taste. They are often served with condiments such as brown sauce or ketchup.

Some of the additional ingredients that may be included in a full breakfast are:

fried or grilled bacon, also referred to as "rashers" or "slices"

baked beans

fried bread

black pudding

bubble and squeak

chips

egg, fried, poached, scrambled or in a basket

English muffins or scones

French toast

Fruit pudding in Scotland

grits in the Southern United States

hash browns

kidneys, grilled or fried

kippers

fried mushrooms

oatcakes

baked beans

fried bread

black pudding

bubble and squeak

chips

egg, fried, poached, scrambled or in a basket

English muffins or scones

French toast

Fruit pudding in Scotland

grits in the Southern United States

hash browns

kidneys, grilled or fried

kippers

fried mushrooms

oatcakes

pancakes (in the USA, Canada, and Ireland)

sautéed potatoes, also known as home fries

potato bread (also called "fadge" or tattie scone)

sausages, sausage links or patties

scrapple (in the Midatlantic US)

sliced sausage (also known as Lorne sausage or square sausage, popular in Scotland)

soda bread

Laverbread (a type of seaweed popular in Wales and usually cooked alongside bacon and cockles)

toast

fried, grilled, or tinned tomatoes

potato waffles

white pudding

potato cakes

Full English breakfast

The normal ingredients of a traditional full English breakfast are bacon (back or streaky), eggs, fried or grilled tomatoes, fried mushrooms, fried bread or toast and sausages, usually served with a mug of tea.

Black pudding is added in some regions, as is fried leftover mashed potatoes (called potato cakes). Originally a way to use up leftover vegetables from the main meal of the day before, bubble and squeak, shallow-fried leftover vegetables with potato, has become a breakfast feature in its own right. Hash browns and baked beans are a common modern addition, while onions, either fried or in rings, occasionally appear. In the North Midlands, fried or grilled oatcakes sometimes replace fried bread. When an English breakfast is ordered to contain everything available it is often referred to as a Full English, or a Full Monty.

Full Irish breakfast

An Irish breakfast consists of sausages, black and white pudding, bacon and fried eggs. In Ireland, as elsewhere, the exact constituents of a full breakfast vary, depending on geographical area, personal taste and cultural affiliation. Traditionally, the most common ingredients are bacon rashers, sausages, fried eggs, white pudding, black pudding, toast, sauteed mushrooms, sliced potato, and fried tomato.[4] Sauteed mushrooms are also sometimes included,[5] as well as liver (although popularity has declined in recent years), and brown soda bread.[citation needed] A full Irish breakfast may be accompanied with a strong Irish Breakfast tea such as Barry's Tea, Lyons Tea, or Bewley's breakfast blend served with milk. Fried potato bread, farl, potato farl or toast is often served as an alternative to brown soda bread.

Ulster Fry

A full Ulster Fry served in Belfast, Northern Ireland.

An Ulster Fry is a dish similar to the Irish breakfast or the Full English, and is popular throughout Ulster.

A traditional Ulster Fry consists of bacon, eggs, sausages (either pork or beef), the farl form of soda bread (the farl is split in half crossways to expose the inner bread and then fried with the exposed side down), potato bread and wheaten farl. Other common components include mushrooms, baked beans or pancake. All this is traditionally fried, however in recent decades, people have taken to grilling the ingredients instead.

The Ulster Fry is often served for breakfast, lunch and dinner in households and cafés around the province. Emigrants have also popularized the serving of an Ulster Fry outside Northern Ireland.

The usual accompaniment is strong tea, typically a blend with a high proportion of Assam leaves.

Between 2001 and 2007 the television channel BBC Two Northern Ireland used a station ID during local opt-outs from national UK programming which featured the BBC Two logo eating an Ulster Fry.

Full Scottish breakfast

In Scotland, the traditional breakfast is porridge, but the "Full Scottish Breakfast", along with the usual eggs, bacon and sausage, is usually differentiated by Scottish-style black pudding, haggis and tattie scones. It may also include fried tomato, baked beans, white pudding, fruit pudding (also fried), and oatcakes. In some instances, the regular "link" sausage is replaced or augmented by square sliced sausage also known as Lorne sausage.

More broadly, Brewer's Dictionary of Phrase and Fable refers to a Scotch breakfast as "a substantial breakfast of sundry sorts of good things to eat and drink".

Full Welsh breakfast

The traditional Welsh breakfast includes laver-bread, a seaweed purée which is then mixed with oatmeal, formed into patties and fried in bacon fat. Cockles are also often eaten.[citation needed] Sometimes however, a "Full Welsh breakfast" will be listed on a Welsh hotel menu, but be identical in content to a Full English Breakfast served with cockles.

North America

A full North American breakfast (Canada and USA) consists of eggs, a "breakfast meat" such as bacon, ham, or sausage, scrapple, pork roll, spam or even steak or country fried steak; fried potatoes such as hash browns or home fries; toasted white, wheat, rye or some other bread, such as English muffins or bagels; fruit or fruit juice, and tea or, usually, coffee. It is often referred to as a "country breakfast" in many areas of the Midwestern United States. The terms "fry" and "full breakfast" are not generally used in North America, though hotels generally distinguish between a light "continental breakfast" and a hot, cooked breakfast.

In the Southern United States the meal is typically known as a "big breakfast" or "Sunday breakfast" and may add or replace elements of the above with: grits, toast or biscuits with white gravy, pancakes, cinnamon rolls or similar sweet pastries.

Central America

Ingredients include ham, sausage or bacon, eggs, much like a full breakfast elsewhere. A distinguishing feature is that fry jacks are also eaten, these being fried pieces of dough, similar to beignets or sopapillas. It can also include items like toast, pancakes, or hash-browns. Fresh orange juice is often added as a drink. Guatemala's version of the full breakfast includes fried plantains, tortillas, and refried black beans. In Belize, once known as British Honduras and part of the British Empire, breakfast often features eggs and/or fried meats such as bacon or ham, fry jacks or thick flour tortillas or Johnny Cakes (thick, fluffy homemade biscuits), and fresh local fruit such as mango or melon and tea. Fried beans, smoked, fried or fresh fish are common substitutes for the meat or eggs. Belizeans enjoy their foods highly spiced and will flavor every meal, including breakfast, with recado (achiote paste), pickled habanero peppers or habanero pepper sauce.

Test "Full breakfast"

1. A meal that consists of several courses is called_____
   a. fool breakfast
   b. full breakfast
   c. fall breakfast
   d. feel breakfast

2. One of the most popular traditional main courses, eaten at breakfast in the UK is_____
   a. beans and bacon
   b. bread and bacon
   c. chips and bacon
   d. bacon and eggs

3. Black pudding is_____
   a. a kind of sausage made from minced pork fat and pig's blood
   b. a kind of cake made from chocolate
   c. a kind of dairly products with cacao
   d. a traditional dish in Africa

4. Kipper is_____
   a. the captain of the ship
   b. smoked, salted fish, esp. herring
   c. a small cap worn by women
   d. a kind of herbs

5. Scrapple is _____
   a. a cake made from biscuits with milk-cream
   b. a cocktail made from a mixture of citrus fruit
   c. a type of cereal with honey adding
   d. scraps of pork cooked with cornmeal

III. Here are represented the set-phrases "In the Restaurant". Look through the phrases, try to remember. Make up and act out the situation "In the Restaurant", using the given phrases.

In the restaurant phrases.

Я хотел бы сделать заказ. I'd like to place an order.

Я хотел бы поужинать. I would like supper.

Я бы предпочел легкий завтрак. I would like a continental breakfast.

Какой напиток Вы предпочитаете перед обедом? What drink would you like before dinner?

Я возьму то, что Вы посоветуете. I'll have whatever you recommend.

Что бы Вы посоветовали? What do you recommend?

Какое в этом ресторане фирменное блюдо? What is the specialty of the house.

Меню, пожалуйста. Menu, please.

Можно попросить меню и карту вин, пожалуйста. May I have the menu and the wine list, please?

Вы подаете вегетарианское меню? Do you serve vegetarian food?

У вас есть меню на английском? Is there an English menu?

Какой у вас сегодня суп? What kind of soup are you serving today?

Какой сегодня фирменный коктейль? What's the cocktail of the day?

Что будете заказывать? May I take your order?

Я возьму то же самое. I'll have the same thing.

Я возьму это. I'll have this.

Сколько времени это займет? How long will it take?

Яичницу (омлет). Scrambled eggs.

Я возьму только бутерброд с ветчиной. I'll just have a ham sandwich.

Бифштекс с жареным картофелем. I'll have a T-bone steak with fried potatoes.

Вам картофель жареный, запеченный или пюре? Would you like fried, baked or mashed potatoes?

Как вам приготовить? How would you like it?

Средне пожаренный, пожалуйста. Medium rare, please.

Хорошо пожаренный, пожалуйста. Well - done, please.

Карту вин, пожалуйста. Please show me the wine list.

Какие вина у вас есть? What kind of wine do you have?

Я бы хотел бутылку белого вина. I would like a bottle of white wine.

Сколько стоит целая бутылка? How much is a whole bottle?

Сколько стоит один бокал? How much is a glass?

Я бы хотел чашку кофе (чая) I would like a cup of coffee (tea).

Можно попросить стакан воды? May I have a glass of water?

Апельсиновый или томатный сок? Orange juice or tomato juice?

Как на счет чего-нибудь на десерт? How about some dessert?

Блинчики и молочный коктейль, пожалуйста. Pancakes and a milk shake, please

Профессионально-ориентированный курс
технического иностранного языка
Part 2.

Unit #1 "Automatic control systems"

1.1 Lead-in. Control systems engineering
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.
Control engineering or Control systems engineering _____ the engineering discipline that _____ control theory to _____ systems with predictable behaviors. Multi-disciplinary in nature, control systems engineering activities focus _____ implementation of control systems mainly_____ by mathematical modeling of systems of a diverse range. Modern day control engineering (also called control systems engineering) is a_____ new field of study. It can be broadly defined as practical _____ of control theory. Control engineering _____ an essential role in a wide range of control systems, _____ simple to high-performance. A system _____ be mechanical, electrical, fluid, chemical, financial and even biological.

Applies, application, derived, has, is, from, on, can, design, relatively, necessary, old.

1.2 What is the topic "Automatic control systems" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.
1.3 Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.

1) manage
2) direct
3) implications
4) applications
5) sophisticated

6) diverse
7) circuit
8) responding
9) flexible
10) devise

1.4 Read the text with the dictionary – to make sure you understand it in detail.

A control system is a device or <u>set of devices</u> to manage, command, direct or regulate the behavior of other devices or systems.

There are two major divisions in <u>control system theory</u>, namely, classical and modern, which have direct implications over the control engineering applications. <u>The scope of</u> classical control theory is limited to <u>single-input and single-output (SISO) system design</u>. A controller designed using classical theory usually requires <u>on-site tuning</u> due to design approximations. The most common controllers, designed using classical control theory, are <u>PID controllers.</u>

<u>In contrast</u>, modern control theory can <u>deal with</u> <u>multi-input and multi-output (MIMO) systems</u>. This overcomes the limitations of classical control theory in more sophisticated design problems, such as fighter aircraft control. In modern design, a system is represented as a set of first order differential equations defined using state variables. Nonlinear, multivariable, adaptive and robust control theories <u>come under</u> this division.

The discipline which studies control systems is called control engineering. It <u>focuses on</u> the modeling of <u>a diverse range of</u> dynamic systems (e.g. mechanical systems) and the design of controllers that will cause these systems <u>to behave in the desired manner.</u> But before it emerged as a unique discipline, control engineering was practiced as a part of mechanical engineering and control theory was studied as a part of electrical engineering, since electrical circuits can often be easily described using control theory techniques. In the very first control relationships, a current output <u>was represented with</u> a voltage control input. However, not having proper technology to implement electrical control systems, designers left with the option of less efficient and slow responding mechanical systems. A very effective mechanical controller that is still widely used in some hydro plants is the governor. <u>Later on,</u> previous to modern power electronics, process control systems for industrial applications were devised by mechanical engineers using pneumatic and hydraulic control devices, many of which <u>are still in use</u> today.

Electrical circuits, digital signal processors and microcontrollers can all be used to implement Control systems. Nowadays control engineering has a wide range of applications from the flight and propulsion systems of commercial airliners, oil and gas industry, energy sector to the cruise control present in many modern automobiles.

In such a way, we can judge, that an automation control systems engineer is a versatile specialist who is able to deal with a lot of different branches of engineering. Moreover, he should be rather flexible, mobile <u>to react properly to</u> dynamic changes in technological world.

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4.2 Give synonyms for the words below. Learn them by heart.

1) device -
2) classical -
3) modern -
4) controller -
5) sophisticated -
6) limitation -
7) unique -
8) manage -
9) diverse -
10) modeling –

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ A control system is a device or set of devices to manage or regulate the activity of other devices or systems.
2) ☐ There are three major divisions in control system theory: classical, virtual and modern.
3) ☐ Classical control theory is based on SISO system design.
4) ☐ Modern control theory can deal with both SISO and MIMO systems design.
5) ☐ In modern design, a system is represented as a set of first order differential equations.
6) ☐ Control engineering studies different control systems.
7) ☐ Nowadays control engineering has a limited range of applications.

1.4.4 Look through the text once more and give the definitions for the following terms and abbreviations. Look for additional information if it is necessary.

1) SISO system design
2) PID controller
3) MIMO system design
4) Differential equation
5) State variable

1.5 Translate, and then render the following abstract into Russian.

Fuzzy logic is an attempt to get the easy design of logic controllers and yet control continuously-varying systems. Basically, a measurement in a fuzzy logic system can be partly true, that is if yes is 1 and no is 0, a fuzzy

measurement can be between 0 and 1. The rules of the system are written in natural language and translated into fuzzy logic.

Fuzzy logic then modifies Boolean logic to be arithmetical. Usually the "not" operation is "output = 1 - input," the "and" operation is "output = input.1 multiplied by input.2," and "or" is "output = 1 - ((1 - input.1) multiplied by (1 - input.2))."

The last step is to "defuzzify" an output. Basically, the fuzzy calculations make a value between zero and one. That number is used to select a value on a line whose slope and height converts the fuzzy value to a real-world output number. The number then controls real machinery.

If the triangles are defined correctly and rules are right the result can be a good control system.

1.6 Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.

1) Feedback in control system theory. Types of feedback.
2) Optimal control and its features.
3) PID controller theory
4) VisSim; SCADA; EPICS.

Unit #2. "Mathematical modeling. Mathematical models"

1.1 Lead-in. Mathematical modeling.
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.

_____is the process of creating a _____of some _____in order to gain a better understanding of that phenomenon. _____serves the following purposes: to find an _____to a planning or decision problem; to answer _____of what-if questions; _____understandings of the _____among the _____items within a model; and to attempt _____past data to derive meaning. The mathematical model must be _____to_____. Adequacy is not_____. When we say about_____, we always _____where and why the mathematical model will be used.

> ***Mathematical modeling, optimal solution, mathematical representation, phenomenon, accuracy, to establish, a variety, adequacy, modeling system, adequate, to mean, input data, relationships, to extrapolate, mathematical model, equation, simulation***

1.2 What is the topic "Mathematical modeling" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.

1.3 Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.

1) mathematical
2) describe
3) science
4) classify
5) involving

6) variable
7) extensively
8) resulting
9) similarly
10) predictor

1.4 Read the text with the dictionary – to make sure you understand it in detail

A mathematical model uses <u>mathematical language</u> to describe a system. Mathematical models are used not only in <u>the natural sciences</u> and engineering disciplines but also in the social sciences; physicists, engineers, computer scientists, and economists use mathematical models most extensively. The process of developing a mathematical model <u>is termed </u>'mathematical modeling'.

Mathematical models <u>can take</u> many forms, including but not limited to <u>dynamical systems, statistical models, differential equations</u>, or <u>game theoretic models</u>. These and other types of models <u>can overlap</u>, with a given model involving a variety of abstract structures.

Also, many mathematical models can be classified in some of the following ways:

<u>Linear vs. nonlinear</u>: Mathematical models are usually <u>composed by variables</u>, which are abstractions of quantities of interest in the described systems, and operators that act on these variables, which can be algebraic operators, functions, differential operators, etc. If all the operators in a mathematical model present linearity, the resulting mathematical model is defined as linear. A model is considered to be nonlinear otherwise.

The question of linearity and nonlinearity <u>is dependent on </u>context, and linear models may have nonlinear expressions in them. For example, in a statistical linear model, <u>it is assumed that</u> a relationship is linear in the parameters, but it may be nonlinear in the predictor variables. Similarly, a differential equation is said to be linear if it can be written with linear differential operators, but it can still have nonlinear expressions in it. In a mathematical programming model, if the objective functions and constraints are represented entirely by linear equations, then the <u>model is regarded as</u> a linear model. If one or more of the objective functions or constraints are represented with a nonlinear equation, then the model is known as a nonlinear model.

Nonlinearity, even in fairly simple systems, is often associated with phenomena such as chaos and irreversibility. Although there are exceptions, nonlinear systems and models <u>tend to be</u> more difficult to study than linear ones. A common approach to nonlinear problems is linearization, but this can be problematic if one is trying to study aspects such as <u>irreversibility</u>, which are strongly tied to nonlinearity.

<u>Deterministic vs. probabilistic (stochastic):</u> A deterministic model is one in which every set of variable states is uniquely determined by parameters in the model and by <u>sets of previous states</u> of these variables. Therefore, deterministic models perform the same way for a given set of initial conditions. <u>Conversely,</u> in a stochastic model, <u>randomness is present</u>, and variable states are not described by unique values, but rather by probability distributions.

Static vs. dynamic: A static model does not account for the element of time, while a dynamic model does. Dynamic models typically are represented with difference equations or differential equations.

<u>Lumped vs. distributed parameters:</u> If the model is heterogeneous (varying state within the system) the parameters are distributed. If the model is homogeneous (consistent state throughout the entire system), then the parameters are lumped. Distributed parameters are typically represented with partial differential equations.

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4.2 Give synonyms for the words below. Learn them by heart.

1) to develop
2) extensively
3) variety
4) simple
5) chaos
6) randomness
7) typically
8) partial

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ Mathematical models are used only in the natural sciences and engineering disciplines.
2) ☐ A model is considered to be nonlinear if all the operators in a mathematical model present linearity
3) ☐ Linear models may have nonlinear expressions.

4) ☐ If one or more of the objective functions are represented with a nonlinear equation, the model is nonlinear.

5) ☐ A deterministic model is one in which every set of variable states is uniquely determined by parameters in the model.

6) ☐ A stochastic model is characterized by randomness.

7) ☐ If the model is heterogeneous then the parameters in it are lumped.

1.4.4 Look through the text once more and give the definitions for the following terms and abbreviations. Look for additional information if it is necessary.

1) vs.
2) Differential equation
3) Lumped parameters
4) Deterministic model
5) Stochastic model
6) Irreversibility

1.5.   Translate, and then render the following abstract into Russian.

The mathematical model must be adequate to modeling system. **Adequacy** is not accuracy. When we say about adequacy, we always mean where and why the mathematical model will be used. For example, we construct a model of fluid movement in a pipeline. So, our model describes hydrodynamics, heat processes and corrosion of pipes. This model is extra-complicated, but the degree of accuracy can be low.

The terms **verification** and **validation** are connected with the term **adequacy.** These terms are often used interchangeably to mean the process of checking the accuracy of a numerical model. But, nevertheless there is the difference between verification and validation. **Validation** denotes the establishment of legitimacy. It requires verification and successful evaluation. **Verification** denotes establishment of truth, it is possible only for the mathematical steps. In other words, **verification** is a check of the math, while **validation** is a check of the physics.

1.6.   Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.

1) Computer simulation.
2) Modeling methods and their advantages.
3) Classification of mathematical models.
4) Analytical and empirical modeling.

45

Unit #3. "Regression analysis. Regression models"

1.1. Lead-in. Regression analysis.
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.

The earliest form of _____was the method of least squares, which was _____Legendre in 1805, and by Gauss in 1809. Legendre and Gauss both _____the method to the problem of determining, from astronomical_____, the orbits of bodies about the Sun. The term "regression" was _____Francis Galton, a cousin of Charles Darwin, in the nineteenth century to _____a biological phenomenon. The _____was that the heights of descendants of tall ancestors tend to regress down towards a normal average. For Galton, regression had only this biological meaning, but his work was later _____Udny Yule and Karl Pearson to a more general _____context.

Phenomenon, regression, statistical, extended by, published by, observations, applied, coined by, describe, method, bodies.

1.2. What is the topic "Regression analysis, regression models" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.

1.3. Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.

1) reduce	6) undetermined
2) independent	7) exactly
3) relate	8) unknown
4) analysis	9) approximately
5) available	10) solution

1.4. Read the text with the dictionary – to make sure you understand it in detail

Regression models involve the following variables:
- The unknown parameters denoted as β; this may be a scalar or a vector of length k.
- The independent variables, X.
- The dependent variable, Y.

A <u>regression model relates Y to</u> a function of X and β. The approximation is usually formalized as E(Y | X) = f(X, β). <u>To carry out</u> regression analysis, the form of the function f <u>must be specified</u>. Sometimes the form of this function is based on knowledge about the relationship between Y and X that does not <u>rely on</u> the data. If no such knowledge is available, a flexible or convenient form for f is chosen.

Assume now that the vector of unknown parameters β is of length k. <u>In order to</u> perform a regression analysis the user must provide information about the dependent variable Y: if N data points of the form (Y,X) are observed, where N < k, <u>most classical approaches to</u> regression analysis cannot be performed: since the system of equations defining the regression model is undetermined, there is not enough data to recover β.

If exactly N = k data points are observed, and the function f is linear, the equations Y = f(X, β) can be solved exactly rather than approximately. This reduces to solving a set of N equations with N unknowns (the elements of β), which has <u>a unique solution</u> <u>as long as</u> the X are <u>linearly independent</u>. If f is nonlinear, a solution may not exist, or many solutions may exist.

The most common situation is where N > k data points <u>are observed</u>. In this case, there is enough information in the data to estimate a unique value for β that best fits the data in some sense, and the regression model when applied to the data can be viewed as an <u>overdetermined system</u> in β.

<u>In the last case</u>, the regression analysis provides the tools for: finding a solution for unknown parameters β that will, for example, <u>minimize the distance</u> between the measured and <u>predicted values</u> of the dependent variable Y (also known as method of least squares).

Under certain statistical assumptions, the regression analysis uses <u>the surplus of information</u> to provide statistical information about the unknown parameters β and predicted values of the dependent variable Y.

Independent measurements can be explained by the following example: consider a logistic regression model, which has three unknown parameters, β0, β1, and β2. An experimenter performed 10 measurements all at exactly the same value of independent variable X. In this case, regression analysis fails to give a unique value for the three unknown parameters; the experimenter did not provide enough information. <u>The best one can do is</u> to calculate the average value of the dependent variable Y and its standard deviation. Similarly, measuring at two different values of X would give enough data for a linear or a power regression (two unknowns), but not a logistic (three unknowns) or cubic (four unknowns).

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4.2 Give antonyms for the words below. Learn them by heart.

1) regression-
2) unknown-
3) dependent-
4) knowledge-
5) available-
6) convenient-
7) unique -
8) minimize-
9) exactly-
10) classical–

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ Regression models involve 2 variables: the dependent and independent.
2) ☐ A regression model relates X to a function of Y and β.
3) ☐ To carry out regression analysis, the form of the function f must be specified.
4) ☐ In order to perform a regression analysis the user must provide information about the independent variable Y.
5) ☐ The most common situation is where N > k data points are observed.
6) ☐ The method of least squares is the process of minimizing of the distance between the measured and predicted values of the dependent variable Y.
7) ☐ Logistic regression model has three unknown parameters, β0, β1, and β2.

1.4.4 Look through the text once more and give the definitions for the following terms. Look for additional information if it is necessary.

1) The independent variable
2) Approximation
3) A regression model
4) Method of least squares
5) Logistic regression model

1.5.   Translate, and then render the following abstract into Russian.

Regression analysis is a collective name for statistics techniques for the modeling consisting of values of a dependent variable (also called response variable or measurement) and of one or more independent variables (also known as explanatory variables or predictors). The dependent variable in the regression equation is modeled as a function of the independent variables, corresponding

parameters ("constants"), and an error term. The error term is treated as a random variable. It represents unexplained variation in the dependent variable.

Regression can be used for prediction (including forecasting of time-series data), inference, hypothesis testing, and modeling of causal relationships.

1.6. **Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.**

1) Interpolation and extrapolation
2) Multicollinearity
3) Random variable
4) The history of regression.

Unit #4. "Least-squares method".

1.1. **Lead-in. Least-squares method.**
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.
The method of least squares _____of the fields of astronomy and _____as scientists and mathematicians _____to provide _____to the challenges of navigating the Earth's oceans during the Age of Exploration. The _____description of the behavior of _____bodies was key to enabling ships to _____in open seas where before sailors had relied on land sightings to _____the positions of their ships.
The method was the _____of several advances that _____place during the course of the eighteenth century.

Geodesy, celestial, took, sail, grew out, solutions, culmination, determine, accurate, sought, thought, crew.

1.2. **What is the topic "Least-squares method" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.**

1.3. **Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.**

1) credited   6) desired
2) fundamentals   7) estimator
3) demonstration   8) independently
4) newly   9) fitting
5) astronomer   10) valid

1.4. Read the text with the dictionary – to make sure you understand it in detail

Carl Friedrich Gauss <u>is credited</u> with developing the fundamentals of the basis for least-squares analysis in 1795 at the age of eighteen. Legendre <u>was the first to</u> publish the method, however.

An early demonstration of the strength of Gauss's method came when it <u>was used to</u> predict the future location of <u>the newly discovered</u> asteroid Ceres. On January 1, 1801, the Italian astronomer Giuseppe Piazzi discovered Ceres and was able to track its path for 40 days before it was lost in the glare of the sun. Based on this data, it was desired to determine the location of Ceres after it emerged from behind the sun without solving the complicated Kepler's <u>nonlinear equations</u> of planetary motion. The only predictions that successfully allowed Hungarian astronomer Franz Xaver von Zach <u>to relocate</u> Ceres were those performed by the 24-year-old Gauss using least-squares analysis.

Gauss did not publish the method until 1809, when it appeared in volume two of his work on celestial mechanics, *Theoria Motus Corporum Coelestium in sectionibus conicis solem ambientium.* In 1829, Gauss was able to state that <u>the least-squares approach</u> to regression analysis is optimal in the sense that in a linear model where the errors have a mean of zero, <u>are uncorrelated</u>, and have <u>equal variances</u>, <u>the best linear unbiased estimator of the coefficients</u> is the least-squares estimator. This result is known as the Gauss–Markov theorem.

The idea of least-squares analysis <u>was also independently formulated by</u> the Frenchman Adrien-Marie Legendre in 1805 and the American Robert Adrain in 1808.

The method of least squares is applied to approximate solutions of overdetermined systems, i.e. <u>systems of equations</u> in which there are more equations than unknowns. Least squares is often applied in statistical contexts, particularly regression analysis.

Least squares <u>may be interpreted as</u> a method of <u>fitting data</u>. <u>The best fit</u>, between modeled data and observed data, in its least-squares sense, is an instance of the model for which the sum of <u>squared residuals</u> has its least value, where a residual is the difference between an observed value and the value provided by the model. Least squares method corresponds to the maximum likelihood criterion if the experimental errors have a normal distribution and can also be derived as a method of moments estimator. Regression analysis is available in most <u>statistical software packages.</u>

The discussion is mostly presented in terms of <u>linear functions</u> but the use of least-squares is valid and practical for more general families of functions. For example, the Fourier series approximation of degree n is optimal in the least-squares sense, amongst all approximations in terms of <u>trigonometric polynomials</u> of degree n. Also, by <u>iteratively applying local quadratic approximation</u> to the likelihood (through the Fisher information), the least-squares method may be used to fit a generalized linear model.

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4. Give antonyms for the words below. Learn them by heart.

1) fundamental
2) develop
3) solution
4) discover
5) path
6) complicated
7) emerge
8) optimal
9) interpret
10) iteratively

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ Carl Friedrich Gauss is the first who developed the fundamentals of the basis for least-squares analysis.
2) ☐ At the beginning least-squares analysis was used in astronomy.
3) ☐ The least-squares approach to regression analysis is the best applying to a linear model where the errors have a mean of zero.
4) ☐ Gauss was the only who formulated the idea of least-squares analysis.
5) ☐ Least squares is often applied in dynamical contexts.
6) ☐ Least squares may be interpreted as a method of unknown data.
7) ☐ The least-squares method may be used to fit a generalized linear model.

1.4.4 Look through the text once more and give the definitions for the following terms. Look for additional information if it is necessary.

1) Nonlinear equations
2) Systems of equations
3) Fitting data
4) Squared residuals
5) Trigonometric polynomials

1.5.   Translate, and then render the following abstract into Russian.

In some contexts a regularized version of the least squares solution may be preferable. The LASSO algorithm, for example, finds a least-squares solution

with the constraint that | β | 1, the L1-norm of the parameter vector, is no greater than a given value. Equivalently, it may solve an unconstrained minimization of the least-squares penalty with α | β | 1 added, where α is a constant. (This is the Lagrangian form of the constrained problem.) This problem may be solved using quadratic programming or more general convex optimization methods, but is most efficiently solved using the results of the least angle regression algorithm. The L1-regularized formulation is useful in some contexts due to its tendency to prefer solutions with fewer nonzero parameter values, effectively reducing the number of variables upon which the given solution is dependent.

1.6. Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.

1) Least absolute deviation
2) Levenberg-Marquardt algorithm
3) Orthogonal regression
4) Iteratively re-weighted least squares

Unit #5. "Physical systems. Mechanical systems".

1.1. Lead-in. Physical systems. Mechanical systems.
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.

In physics the word _____has a _____meaning, namely, it is the _____of the physical universe chosen for analysis. Everything outside the system is known as the_____, which in analysis is ignored except for its effects on the system. The cut between system and environment is a free_____, generally made to simplify the _____as much as possible. Often a system in this sense is chosen to _____to the more usual meaning of system, such as a particular_____. But physical systems are often more_____: an atom, the water in a lake, or indeed the water in the left-hand half of a lake can all be considered as _____systems.

Choice, environment, machine, esoteric, physical, portion, technical, correspond, system, analysis, mechanical, describe.
1.2. What is the topic "Physical systems. Mechanical systems" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.

1.3. **Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.**

1) contain   6) formulated
2) viewpoint   7) acceleration
3) analogous   8) various
4) governing   9) dimensions
5) directly   10) angular

1.4. **Read the text with the dictionary – to make sure you understand it in detail**

Most feedback control systems contain mechanical as well as electrical components. From a mathematical viewpoint, the descriptions of electrical and mechanical elements are analogous. In fact, we can show that given an electrical device, there is usually an analogous mechanical counterpart, and vice versa. The analogy, of course, is a mathematical one; that is, two systems are analogous to each other if they are described mathematically by similar equations.

The motion of mechanical elements can be described in various dimensions as translational, rotational, or a combination of both. The equations governing the motions of mechanical systems are often directly or indirectly formulated from Newton's law of motion.

The motion of translation is defined as a motion that takes place along a straight line. The variables that are used to describe translational motion are acceleration, velocity, and displacement.

Newton's law of motion states that *the algebraic sum of forces acting on a rigid body in a given direction is equal to the product of the mass of the body and its acceleration in the same direction.* The law can be expressed as

$$\sum forces = Ma$$

where M denotes the mass and a is the acceleration in the direction considered.

The rotational motion of a body may be defined as motion about a fixed axis. The variables generally used to describe the motion of rotation are torque; angular acceleration, a; angular velocity, w; and angular displacement, 0. The following elements are usually involved with the rotational motion.

Inertia. Inertia, /, is considered as an indication of the property of an element which stores the kinetic energy of rotational motion. The inertia of a given element depends on the geometric composition about the axis of rotation and its density.

For instance, the inertia of a circular disk or a circular shaft about its geometric axis is given by

$$J = \tfrac{1}{2} Mr^2$$

where M is the mass of the disk or shaft and r is its radius.

In motion control problems it is often necessary <u>to convert rotational motion into</u> a translational one. <u>For instance</u>, a load may be controlled to move along a straight line through a rotary motor and <u>screw assembly</u>. That's why it is very important for mechanical engineer to know all the possible variants of problem decision.

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4.2 Give synonyms for the words below. Learn them by heart.

1) to control -
2) description -
3) to show -
4) similar -
5) directly -
6) motion -
7) rigid -
8) to store -
9) vice versa -
10) combination

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ Most feedback control systems contain only mechanical components.
2) ☐ From a mathematical viewpoint, the descriptions of electrical and mechanical elements are different.
3) ☐ The motion of mechanical elements can be described in three dimensions.
4) ☐ Newton's law of motion is the basic one to describe mechanical systems.
5) ☐ The translational motion of a body may be defined as motion about a fixed axis.
6) ☐ The inertia of a given element depends on the algebraic composition about the axis of rotation and its density.
7) ☐ The motion of translation is defined as a motion that takes place along a straight line.

1.4.4 Look through the text once more and give the definitions for the following terms. Look for additional information if it is necessary.

1) translational motion
2) rotational motion
3) angular displacement
4) torque
5) kinetic energy

1.5. Translate, and then render the following abstract into Russian.

Mechanical systems as a controlled objective are mostly characteristic of multi-DOF (Degrees-Of-Freedom), existence of strong nonlinearities due to rotational joints, subjection to physical constraints, and redundancy in DOF. The desirable control goals may be related to not only physical variables of position and velocity of the system but also force or torque that is exerted on environment.

In nature, motion of mechanical systems is governed by the Lagrange equation that follows from the variational principle in mechanics, as described early on by Landau and Lifschitz (1960).

Robot motion control is typical of control of mechanical systems with multi degrees-of-freedom. It is governed by the Lagrange equation in terms of the vector of joint angle : $q = (q_1, \cdots, q_n)^T$

$$H(q)\ddot{q} + \left\{ \frac{1}{2}\dot{H}(q) + S(q, \dot{q}) \right\} \dot{q} + g(q) = u$$

where $\dot{q}$ denotes the vector of joint angular velocities defined as $\dot{q} = dq/dt$, the derivative of q in time parameter $\ddot{q} = d\dot{q}/dt$, $H(q) = (h_{ij}(q))$, the $n \times n$ inertia matrix, $g(q)$ the gravity torque vector defined as a gradient of the gravity potential $P(q)$, that is, $g(q) = \partial P(q)/\partial q$, u the external joint torque that can be regarded as control input, and $S(q, \dot{q}) = (s_{ij}(q))$ is given by (e.g. Arimoto (1996))

$$s_{ij}(q) = \frac{1}{2} \left\{ \frac{\partial}{\partial q_j} \left(\sum_{k=1}^{n} \dot{q}_k h_{ik}(q) \right) - \frac{\partial}{\partial q_i} \left(\sum_{k=1}^{n} \dot{q}_k h_{jk}(q) \right) \right\}$$

1.6. Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.

1) Mechatronics and robotics
2) Nanotechnology
3) Mechanical engineering technologies
4) Micro electro-mechanical systems (MEMS)

Unit #6. "Electrical networks".

1.4 Lead-in. Electrical networks.
Fill in the gaps with the suitable words given below. Use each word once only. There are 2 odd words here.
An electrical _____is a path which _____from a voltage or current _____follow. Electric current _____in a closed path called an electric

circuit. The point where those electrons _____an electrical circuit is called the "source" of electrons. The point where the electrons _____an electrical cirucit is called the "return" or "earth ground". The exit point is called the "return" because electrons always end up at the source when they _____the path of an electrical circuit. The _____of an electrical circuit that is between the electrons' _____point and the point where they _____to the source is called an electrical circuit's "_____".

*Electrons, source, load, flows, enter, leave, return, part, starting, circuit, road, live.*

1.5 What is the topic "Electrical networks" associated with in your mind? Put your ideas into separate words. Then make up a logical abstract on the subject using the words from your lists. Discuss it with your group mates.

1.6 Make sure that you know the words below (use a dictionary if it is necessary). What parts of speech can they belong to and what derivatives can they form? Work in pairs.

1) interconnection   6) algebraic
2) resistors   7) distributed
3) transmission   8) nonlinear
4) closed   9) numerically
5) necessarily   10) approximation

1.7 Read the text with the dictionary – to make sure you understand it in detail

A simple <u>electric circuit made up of</u> a voltage source and a resistor. (Figure
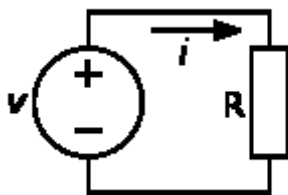
1)
Figure 1

An electrical network is <u>an interconnection of</u> electrical elements such as <u>resistors, inductors, capacitors, transmission lines, voltage sources, current sources, and switches.</u>
<u>At the same time</u>, an electrical circuit is a network that has a closed loop, giving a return path for the current. A network is a connection of two or more components, and <u>may not necessarily be</u> a circuit.

Electrical networks that consist only of sources (voltage or current), <u>linear lumped elements</u> (resistors, capacitors, inductors), <u>and linear distributed elements</u> (transmission lines) <u>can be analyzed by</u> algebraic and transform methods to determine <u>DC response</u>, <u>AC response</u>, and transient response.

A network that also contains active electronic components is known as an electronic circuit. Such networks are generally nonlinear and <u>require more complex design and analysis tools.</u>

To design any electrical circuit, <u>either analog or digital</u>, electrical engineers <u>need to be able to predict</u> the voltages and currents at all places <u>within the circuit</u>. Linear circuits, that is, circuits with the same <u>input and output frequency</u>, can be analyzed by hand using complex number theory. Other circuits can only be analyzed with specialized software programs or estimation techniques.

Circuit simulation software, such as VHDL and HSPICE, allows engineers to design circuits without the time, cost and <u>risk of error</u> involved in building circuit prototypes.

But all the processes are impossible to realize without knowing the appropriate laws. These are:

1. Kirchhoff's current law: The sum of all currents entering a node is equal to the sum of all currents leaving the node.

2. Kirchhoff's voltage law: The directed sum of the electrical potential differences around a loop must be zero.

3. Ohm's law: The voltage across a resistor is equal to the product of the resistance and the current <u>flowing through</u> it (at constant temperature).

4. Norton's theorem: Any network of voltage and/or current sources and resistors is electrically equivalent to an ideal current source in parallel with a single resistor.

5. Thévenin's theorem: Any network of voltage and/or current sources and resistors is electrically equivalent to a single voltage source in series with a single resistor.

More complex circuits can be analyzed numerically with software such as SPICE or symbolically using software such as SapWin.

Software such as the PLECS interface to Simulink uses piecewise-linear approximation of the equations <u>governing the elements of</u> a circuit. The circuit <u>is treated as</u> a completely linear network of ideal diodes. Every time <u>a diode switches from on to off or vice versa</u>, the configuration of the linear network changes. Adding more detail to the approximation of equations increases the accuracy of the simulation, but also increases its running time.

1.4.1 Give Russian equivalents to the underlined expressions in the text and make up short situations using as many lexical units as it is possible.

1.4.2 Give synonyms for the words below. Learn them by heart.

1) simple -
2) closed -
3) linear -
4) impossible -
5) directed -
6) differences -
7) equal -
8) parallel -
9) ideal -
10) appropriate –

1.4.3 Mark the following statements as either true (T) of false (F).

1) ☐ An electrical network is an interchanging of electrical elements.
2) ☐ An electrical network can be analyzed by both algebraic and transform methods.
3) ☐ The sources in the electrical network are resistors and switches.
4) ☐ DC means displaced capacitor.
5) ☐ A network that contains active electronic components is known as an electronic circuit.
6) ☐ Kirchhoff's current law declares that the sum of all currents entering a node is equal to the sum of all currents leaving the node.
7) ☐ Complex circuits can be analyzed numerically with the help of software.

1.4.4 Look through the text once more and give the definitions for the following terms and abbreviations. Look for additional information if it is necessary.

1) AC
2) VHDL/ HSPICE
3) piecewise-linear approximation
4) linear network
5) single voltage source

1.5.   Translate, and then render the following abstract into Russian.
Ground-fault-interrupt-(GFI)-devices

    The standard return for electrical and electronic circuits is the earth ground. When an improperly designed electrical or electronic device fails, it may open the return circuit to the earth ground. The user of the device could become a part of the device's electrical circuit by providing a return path for the electrons through the user's body instead of the circuit's earth ground. When the user's

body becomes part of an electrical circuit, the user can be seriously shocked, or even killed by electrocution.

To prevent the danger of electrical shock and the possibility of electrocution, ground fault interrupt devices detect open circuits to earth ground in attached electrical or electronic devices. When an open circuit to earth ground is detected, the GFI device immediately opens the voltage source to the device. GFI devices are similar to circuit breakers, but are designed to protect humans rather than circuit components.

1.6. Work in pairs or individually. Choose a topic, look for additional information and prepare the presentation to demonstrate it to your group mates.

1) PLECS/ Simulink
2) Voltage drop
3) Series and parallel circuit
4) Complex number theory

Vocabulary:

accuracy – точность, правильность
adequacy – адекватность, соответствие, точность
aggregation error – ошибка упрощения
alternating-current (ac) – переменный ток
analytical - аналитический
approximation – приближенное значение
artificial method – модельный метод
availability of information – пригодность информации
be applied at - быть примененным при
«best fit» - максимальное соответствие
bold symbol – символ, выделенный жирным шрифтом
capacitance – емкостное сопротивление
capital letter – заглавная буква
capture – фиксировать, улавливать, захватывать
causal relationship – причинная связь
charge – заряд
closed loop – замкнутый контур
coefficient – коэффициент, показатель
cofactor – кофактор, алгебраическое дополнение
complexity – сложность, коэффициент сложности
control object – объект управления
convention –основание, соглашение
correspondence - соответствие
criterion (criteria) – критерия, критерии

cross-sectional area – площадь поперечного сечения
data generation – формирование данных
decimal – десятичный, десятичная дробь
denominator – знаменатель
dependent variable – зависимая переменная
derivative – производное
derive – получать, извлекать
deterministic model – детерминированная модель, (не содержащая случайных элементов)
distributed-parameter circuit – цепь с распределенными параметрами
distribution – распределение, распространение
direct-current (dc) – постоянный ток
dynamic – динамический
electrical circuit element – элемент электрической схемы
empirical – эмпирический, полученный опытным путем
equate – приравнять, считать равными
equation - уравнение
error mean square – дисперсия воспроизводимости
error term – вектор ошибок
estimate – оценивать, проводить оценку
estimate value – оценочное значение
excitation condition – активизация, условие существования
exponential functions – показательная функция
exponentially – в геометрической прогрессии
extrapolate – экстраполировать (оценивать)
flux- поток, течение
fraction – дробь
F-test – критерий F
goal – задача, цель
ground symbol – заземление
group like terms – приводить подобные члены
hypothesis testing – проверка гипотезы
identification – идентификация, распознавание
identification task – задача идентификации
identity matrix – единичная матрица
implement – осуществлять, реализовывать
independent variable – независимая переменная
inductance – индуктивность
input variables – входная величина, переменная
instantaneous algebraic sum – моментная алгебраическая сумма
integral equation – интегральное уравнение
invertible – обратимый
least-squares method – метод наименьших квадратов

left-hand loop – левосторонний контур

linear (non-linear) equation – линейное/ нелинейное уравнение

linearization error – ошибка линеаризации

logarithmic functions – логарифмическая функция

loop – замкнутая цепь

lumped – сосредоточенный (о параметрах системы)

mathematical dependence – математическая зависимость

mathematical modeling – математическое моделирование

matrix (matrices) – матрица, (матрицы)

matrix notation – матричная запись

measurements – измерения

measurement error – ошибка измерения

minimize – минимизировать, свести к минимуму

modeling error – ошибка моделирования

network – схема, цепь, контур

node law – закон «узла»

non-continuous (piecewise continuous) function – прерывистая / кусочно-непрерывная функция

nonorthogonal polynomials – не ортогональные полиномы

null hypothesis – нулевая гипотеза

normal equation – нормальное уравнение

numerator – числитель

numerical values of variables – численные значения переменных

obtain – применять, достигать

output variables – выходная величина, переменная

perform – исполнять, выполнять, делать

pipeline – трубопровод

polynomial – полином, многочлен

postmultiply – умножение справа

power functions – степенная функция

predict – предугадывать, прогнозировать

prediction – предсказание. Прогноз

premultiply – умножение слева

priori information – априорная информация

proportional – пропорциональный, соразмерный

proportionality – пропорциональность

quantitative model – количественная модель

quantization error – ошибка квантования

random variable – случайная переменная

range of values – область значений

real number – действительное число

real-time testing – контроль в режиме реального времени

regression analysis – регрессивный анализ

regression model – регрессионная модель
reject – отклонять
residual variance – остаточная дисперсия
resistance – сопротивление
resistant element – элемент сопротивления
right-hand loop – правосторонний контур
sample – образец , экземпляр
scalar – скалярная величина
significance level – уровень значимости
similar terms – подобные члены
simplicity - простота
simulation – имитационное моделирование
simultaneous linear equations – ряд линейных уравнений
single-output system – одновыходная система
small letter – прописная буква
solve – решать, разрешать (проблему)
sophisticated model – сложная модель
split – расщеплять, делить
static - статический
stochastic model – стохастическая (вероятностная) модель
substituting value – заменяемая величина
substitution – замена
sum of squared errors – сумма квадратичных ошибок
tabulate – табулировать, сводить в таблицу
target – задание, эталон, образец
terminal – зажим, клемма, терминал
time derivative – производная по времени
time horizon – временной горизонт, период времени в моделировании
transient – переходный процесс
Transpose matrix – транспонированная матрица
trial–and- error method – метод проб и ошибок
trigonometric functions – тригонометрическая функция
unexplained variation – необъяснимые изменения
unit – единица измерения
universality – универсальность
validation – ратификация, подтверждение правильности
valve – клапан, вентиль, заслонка
vector – вектор
vector notation – векторная запись, обозначение
verification – верификация, подтверждение корректности
veritable – истинный
voltage – напряжение
voltage drop – падение напряжения

wavelength – длина волны
wire – проводник, кабель, проволока
with respect to – что касается, по отношению к
yield – приводить к чему - либо

Appendix

<u>Reading mathematical writing</u>

1) Numerals (cardinal and ordinal numbers)

1,564 = one thousand five hundred and sixty-four

1,564[th] = (the) one thousand five hundred and sixty-fourth

  Read: 233; 567th; 7,678; 6781st; 21,001; 23,222[nd]

Note that a comma is used to separate groups of 000

100,000 = a hundred thousand; 100,000th = hundred thousandth 1,000,000 = a million; 1,000,000th = millionth

1,000,000,000 = a thousand million or milliard, a billion (US) 1,000,000,000th = a thousand millionth; billionth (US)

  Read: £2,500,000; $ 23,000,000,000; 30,000th decimal place

2) Decimals

20.95	twenty point nine five
3.14159 (π)	three point one four one five nine
1.333	one point three recurring
4!	factorial 4 (i.e. 4.3.2.1)
0	O, nought, zero
0.0001	O point OOO 1

  Read: 36.87; 1 001:001: 1.0063

3) Fractions

5/8 five over eight or five eights
2/3	two thirds
1/167	one over one hundred and sixty seven/ a one hundred and sixty seventh
1/1836	one over... or a one thousand eight hundred and thirty sixth
1/n	one over n, the reciprocal of n
n^2 ; n^3	n squared; n cubed; n to the power of three, etc.
1.4×10^{-6}	one point four times ten to the minus six

Read: 1/8; ½; ¼; ¾ ;2/3; 3/8; 5/8; 7/8; 1/x; n^n ; 6.02×10^{23} (Avogadro's number)

English for Mathematics/McElholm

±	Plus or minus
=	Equals
≡	Is identical with
≈	Approximately equals
≠	Is not equal to
≥	Greater than
<	Less than
>	Greater than or equal to
<	Less than or equal to
-	Minus
÷	Sign of division
/	Divided by
×	Times, by
·	Multiplied by
()[]{}	Brackets, parentheses (round, square, curly)
x^2	x squared
x^3	x cubed
x''	x to the [power of] n
x^n	x to the [power of] n
	x [raised] to the nth power
√	(the) square root (of)
→	Approaches, tends to
∞	Varies as
| |	Absolute value
∞	Infinity
n!	Factorial, n(n-l)(n-2)...l
Σ	Sum of a series of numbers
∴	Therefore
dx	Differential of x
Δx	Increment of x
sin α	sine alpha
cos β	cos/cosine beta
tan θ	tan/tangent theta

Test yourself
What is a mathematical model?
What is the difference between empirical and analytical models?
What are the main requirements to the mathematical models?
What is the essence of model adequacy?
Explain the terms of model validity and verification.
What are regression models?
Explain the essence of least squares method.

What are the advantages of the regression models?

What criterion can we use to check the model adequacy?

Explain how can we apply the Fisher's exact test?

What are the specific features of non-linear model identification?

What are the advantages of orthogonal polynomials during approximation of non-linear processes?

What model variations are possible to use non-orthogonal polynomials?

What is the best criterion to choose the most suitable degree of polynomial approximant?

Enumerate the main principals of the model building of technical systems.

Summarize the basic laws to build the models of electrical systems.

Summarize the basic laws to build the models of hydraulic systems.

Summarize the basic laws to build the models of mechanical systems.

Revising Test

1. Translate the given words.

output variables
input variables
control object
sophisticated model
to capture
trial–and- error method
error term
causal relationship
derivative
single-output system
substituting value
premultiply
postmultiply
inverse
real number

2. Give the English equivalents to the words and word combinations.

случайная переменная
максимальное соответствие
задача идентификации
метод наименьших квадратов
сумма квадратичных ошибок
транспонированная матрица
пригодность информации
математическая зависимость
линейное/ нелинейное уравнение
прерывистая / кусочно-непрерывная функция

имитационное моделирование
расщеплять, делить
универсальность
соответствие
 контроль в режиме реального времени

3. Translate the sentences from English into Russian.

- The terms **Verification** and **Validation** are connected with the term **Adequacy,** these terms are often used interchangeably to mean the process of checking the accuracy of a numerical model.
- Regression analysis is a collective name for statistics techniques for the modeling consisting of values of a dependent variable (also called response variable or measurement) and of one or more independent variables (also known as explanatory variables or predictors).
- The solution of the set of normal equations can be obtained by any method (Gauss method, Cramer method, method of substitution, etc.
- The inverse is the matrix analog of division in real numbers. The inverse has the property that when we multiply a matrix by its inverse, the result is the identity matrix
- Mathematical modeling problems are often classified into black box or white box models, according to how much a priori information is available of the system.

4. Translate the abstract from Russian into English.

Нечеткая логика - математические основы

Математическая теория нечетких множеств (fuzzy sets) и нечеткая логика (fuzzy logic) являются обобщениями классической теории множеств и классической формальной логики. Данные понятия были впервые предложены американским ученым Лотфи Заде (Lotfi Zadeh) в 1965 г. Основной причиной появления новой теории стало наличие нечетких и приближенных рассуждений при описании человеком процессов, систем, объектов.

Прежде чем нечеткий подход к моделированию сложных систем получил признание во всем мире, прошло не одно десятилетие с момента зарождения теории нечетких множеств. И на этом пути развития нечетких систем принято выделять три периода.

Первый период (конец 60-х–начало 70 гг.) характеризуется развитием теоретического аппарата нечетких множеств (Л.Заде, Э.Мамдани, Беллман). Во втором периоде (70–80-е годы) появляются первые практические результаты в области нечеткого управления сложными техническими системами. Наконец, в третьем периоде, который длится с конца 80-х годов и продолжается в настоящее время, появляются пакеты программ для построения нечетких экспертных систем.

МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ РОССИЙСКОЙ ФЕДЕРАЦИИ
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Высшего профессионального образования
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Центр Дистанционного Образования

Кафедра иностранных языков№1

РАБОЧАЯ ПРОГРАММА УЧЕБНОЙ ДИСЦИПЛИНЫ
Иностранный (английский) язык
Для студентов дистанционного обучения
Форма обучения: дистанционная заочная
Курс: 1-2
Семестр: 1-4

ТЮМЕНЬ
2014

ВВЕДЕНИЕ

В современном мире иностранный язык играет исключительно важную роль в таких областях человеческой деятельности, как наука, техника, экономика, торговля, дипломатия, туризм. Он выступает в качестве рабочего языка абсолютного большинства международных научных, технических, политических и профессиональных международных конгрессов, конференций, симпозиумов и семинаров.

В России в настоящее время происходят изменения во всех сферах деятельности. В этих условиях усилился интерес к овладению иностранными языками.

Стремление стать высокопрофессиональными специалистами своего дела ставит Вас перед проблемой овладеть определённым запасом умений и навыков, необходимых для Вашей дальнейшей трудовой деятельности на любом уровне в профессиональной сфере.

Основной целью обучения студентов иностранному языку является овладение лексико-грамматическим минимумом, необходимым для профессионального общения (устные и письменные формы общения), формирование умения читать литературу по специальности без словаря с целью поиска информации, переводить тексты по специальности со словарём.

СОДЕРЖАНИЕ КУРСА

Основной курс содержит два этапа. В соответствии с этим распределяется языковой материал, включающий в себя лексический минимум, грамматический минимум и тематику устных высказываний (диалог и монолог).

I ЭТАП

Лексический минимум

Объём словарного запаса студентов должен составить 500 лексических единиц (слов и словосочетаний). Данный объём лексических единиц является основой для расширения потенциального запаса студентов. В словарный запас включаются также фразеологические сочетания, наиболее употребительные синонимы иностранного язык и условные сокращения слов, принятые в иноязычных текстах.

Грамматический минимум

*   Имя существительное

Артикли (определённый и неопределённый) как признаки имени существительного; предлоги – выразители его падежных форм. Окончание

-s- показатель множественного числа имени существительного. Окончания **'s, s'** как средство выражения притяжательного падежа.

Образование множественного числа путём изменения корневой гласной, типа: **a man – men**, **a woman – women**, **a child – children**.

*   *Имя прилагательное*. Степени сравнения. Конструкции: **as … as, not so…as, than, absolute construction.**

   *   *Имена числительные*. Количественные, порядковые. Чтение дат.

*   *Местоимения*. Личные местоимения в формах именительного и объектного падежей; притяжательные местоимения; указательные местоимения; неопределённые местоимения; отрицательное местоимение.

*   *Глагол*. Образование видовременных групп: **The Present Simple, The Past Simple, The Future Simple, The Present Continuous, The Present Perfect Tense**.

Глаголы «to be», «to have» в утвердительных, вопросительных и отрицательных предложениях. **Модальные глаголы.**

      Синтаксис.

Простое распространённое предложение. Члены предложения. Прямой порядок слов повествовательного предложения в утвердительной и отрицательной формах. Обратный порядок слов в вопросительных предложениях. Оборот **there is (are)**, его перевод.

№ темы	Тема	Содержание
1	Введение	Значение курса. Методика изучения курса.
2	«Грамматический блок №1»	Определённый и неопределённый артикль. Личные местоимения (именительный падеж). Притяжательные местоимения. Глагол «to be» в утвердительном, отрицательном и вопросительном предложении. Вопросительные слова. Специальный вопрос с глаголом «to be» **Практические задания по блоку**
3	«Грамматический блок №2»	Указательные местоимения. Множественное число существительных. Количественные числительные. Притяжательный падеж существительных. Глагол «have got» в утвердительном, отрицательном и вопросительном предложении **Практические задания по блоку**
4	«Грамматический блок №3»	The Present Tenses.(Настоящие времена) The Past Tenses.(Прошедшие времена) The Future Tenses.(Будущие времена)

		Практические задания по блоку
5	«Грамматический блок № 4»	Passive and Active Voices (Страдательный и действительный залоги) Modal Verbs (Модальные глаголы) Word Order (Порядок слов в предложении) **Практические задания по блоку**
6	«Разговорные темы»	- About myself (О себе) - Traveling abroad (путешествие в страну изучаемого языка) **Практические задания по блоку**
7	«Аудирование»	- «В отеле» - «В магазине» - «Как добраться до определённого места в городе?» **Практические задания по блоку**
8	«Чтение»	- «Кухня страны изучаемого языка» (Cuisine) **Практические задания по блоку**
9	«Итоговый тест»	Контроль знаний по всем изученным блокам

II ЭТАП

Курс «Профессиональный английский язык» состоит из шести модулей (Units), посвященных профессионально значимым темам. Каждый модуль включает в себя профессионально-активную лексику для усвоения; текст по специальности; упражнения, направленные на развитие коммуникативных умений и речевых навыков студентов. Данный курс содержит справочные материалы, вокабуляр, вопросы по тематике курса для самопроверки и итоговый тест.

№ темы	Тема	Содержание
1	Введение	Значение курса Методика изучения курса
2	Automatic control systems. Автоматизированные системы контроля.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)
2	Mathematical modeling. Математическое моделирование.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)

3	Regression analysis. Регрессивный анализ.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)
4	Least-squares method Метод наименьших квадратов.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)
5	Physical systems. Mechanical systems. Физические системы. Механические системы.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)
6	Electrical network. Электрические цепи.	1. Лексика по модулю 2. Текст профессиональной направленности 3. Упражнения (подстановочные, тренировочные, переводные)
7	Test yourself Вопросы для самоконтроля	Вопросы для самопроверки и контроля знаний по темам
8	Revising test	Итоговый контроль
9	Project work.	Презентация по заданной профессиональной тематике.

БЛОК КОНТРОЛЯ

По окончании 1-го и 2-го этапов студенты выполняют **зачетную работу.**

Рейтинговая система по курсу
1 курс (1-2 семестры)

№ темы	Наименование задания	Баллы
1	Тест Артикли	0-5
2	Тест Число существительного	0-5
3	Тест Падеж существительного	0-5
4	Тест Степени сравнения прилагательных	0-5
5	Тест Числительные	0-5
6	Тест to be, to have, to do	0-5
7	Тест Порядок слов в предложении	0-5
8	Тест Времена действительного залога	0-5
9	Тест Времена страдательного залога	0-5
10	Тест Модальные глаголы	0-5
11	«Разговорные темы» About myself	0-10
12	«Разговорные темы» Great Britain (Presentation)	0-10
13	«Аудирование»	0-5
14	«Чтение»	0-5
15	«Итоговый тест»	0-20
	Итого:	**0-100**

2 курс (3-4 семестры)

№ темы	Наименование задания	Баллы
1	Automatic control systems. Автоматизированные системы контроля.	0-10
2	Mathematical modeling. Математическое моделирование.	0-10
3	Regression analysis. Регрессивный анализ.	0-10
4	Least-squares method Метод наименьших квадратов.	0-10
5	Physical systems. Mechanical systems. Физические системы. Механические системы.	0-10
6	Electrical network. Электрические цепи.	0-10
7	Test yourself Вопросы для самоконтроля	0-5
8	Revising test	0-10
9	Project work.	0-25
	Итого:	**0-100**