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АНГЛИЙСКИЙ ЯЗЫК ДЛЯ ИНЖЕНЕРОВ

Практикум

Электронное учебное пособие

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Вперед→

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Предназначено для практической и самостоятельной работы студентов технических вузов и среднего профессионального образования с разным уровнем владения английским языком. Пособие направлено на формирование способностей к коммуникации на иностранном языке в устной и письменной формах, содержит общетехническую лексику, тексты для чтения и перевода, задания для аудирования.

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Оглавление

Предисловие

Данное учебное пособие предназначено для практической и самостоятельной работы студентов технических вузов и учреждений средне профессионального образования всех направлений подготовки с разным уровнем владения языком. Пособие содержит необходимый лексический и грамматический материалы, тексты для чтения и перевода, а также встроенные аудио-видео материалы, необходимые для будущей профессиональной деятельности. Все материалы, представленные в данном пособии, являются оригинальными и взяты из англоязычных источников, связанных с инженерным образованием и инженерным делом, отражающим современные тенденции развития инженерного дела.

На основе данного пособия студенты закрепляют и развивают умения и навыки чтения и перевода иноязычных текстов, осваивают общеинженерную лексику, необходимую в будущей профессиональной деятельности, развивают навыки восприятия иноязычной речи на слух. Пособие дает возможность развивать навыки публичной речи по изучаемым темам, составления презентаций на иностранном языке, навыки практического восприятия информации и так далее. Пособие также содержит материалы для повторения базового материала, необходимого для изучения иностранного языка в ВУЗе. В приложении к пособию представлены дополнительные материалы для самопроверки и саморазвития.

Module 1

Task1. Give the plural of the following nouns

singular	plural
datum	
energy	
curriculum	
stress	
structure	
source	
material	
property	
quality	
adhesive	
screw	
technology	
key	
roof	
laboratory	
cylinder	
fault	
damage	

Task 2. Write the following numbers in words

1. **cardinal numbers** 13, 25, 91, 34, 2731, 948, 100, 3000, 875; phone number 8-904-4322-09-67, room 456, flight AD 100;

years: 2018, 1800, 1930–1939, 1810–1819, 2001–2099, 08.03,31.12; **time**: 7:00, 8:30, 6:15, 9:40, 5:45, 3:50, 2:55, 1:10, 11:02;

fractions, decimals and percentages: ½, ¼, 0.2, 3.89, 34.65 g, 229,359 m^3, 5%, 20 °C, 1.33, 6.7895;

2. **ordinal numbers** 1st, 2nd, 3d, 4th, 15th, 12th, 33d, 425th; 1990–1999, 1820–1829, 1500–1599;

3. **arithmetic:** 5 + 4 = 9, 5 – 4 = 1, 20 : 4 = 5, 6 × 7 = 42.

Task 3. Do a quiz discuss your answers with other students

1. What is longer: a centimeter or an inch?
2. Is one metre as long as a yard?
3. Which building is taller: 50-metre or 50-feet one?
4. Who drove faster: the driver who was driving 80miles / hour or the one who was driving 80 km/h?
5. Do you get the same if you buy one kilo of cherries or one pound of them?
6. Which is lighter: one gram or one ounce?
7. If miss a symbol for1metre, should you write two metres as 2 ms?
8. Which spelling is correct metre or meter?
9. What is the symbol for litre: L or l?
10. How should you punctuate this number 6455340000?
11. Are tons and tones the same thing?

Task 4. Use there + be construction and the ideas below to describe your native city (you can use your own ideas). Use positive and negative sentences and Present Simple and Past Simple tenses

Model 1: There are a lot of parks and squares in my city.

Model 2: There were no supermarkets in my town a few years ago.

1. a museum / museums	7. shopping malls
2. a circus	8. plants / factories
3. a bus /railway station	9. a lot of pollution
4. an amusement park	10. beautiful places
5. universities / institutes	11. good roads
6. a lot of traffic	12. modern buildings

Task 5. Translate the sentences into Russian

1. When it comes to measuring work pieces, there are various methods
and many tools available for this task.
2. The most common instruments in mechanical engineering are vernier calipers or caliper rules which can be used universally in the workshop.
3. For a very long time every country has used its own measurement system and units which led to a lot of problems, as the measurements of a work piece were not comparable to each other.
4. Metals have the property to conduct heat as well as electrical current and they have an aureate surface.
5. In case of elastic deformation, the structure returns to its original structure once the force has been removed and in case of permanent deformation, the structure changes, which is irreversible.
6. Ductility varies with the different materials, but in general it is possible to deform them.
7. The maintenance department regularly services the machine.
8. We checked the production unit last week.
9. We will make the plans ready by the end of next week.
10. The accident happened while we were cleaning the machine.
11. Therefore, the exercises will provide an overview of the content of a toolbox, useful verbs, measurement tools and the most common units that are needed in during daily working processes.
12. When loads and reactions acting on a member are equal, we say it is in equilibrium.

Task 6. Read the information and try to guess what the followings objects are. Use the tips 1-10 below

Model 1: I think Object A is____.

Model 2: I think Object B is the world's____est____.

1. It is the space shuttle.
2. It is a Boeing 747 (Jumbo jet).
3. It is the world's largest photo.

4. It is the 2005 Ferrari Formula 1 racing car.
5. It is the Earth.
6. It is the world's lightest flying robot (the Epson FR II).
7. It is the world's largest container ship.
8. It's an iPod (a portable music player made by Apple).
9. It is the Great Wall of China.
10. It is the Eiffel Tower in Paris.

Object A. It's 61.8 mm wide. It's 103.49 mm long. It's 15.70 mm thick. It's a rectangle. It's white. Its screen is 40.29 mm wide. Its screen is 32.61 mm high. It has one big circular button. The button's radius is 38.70 mm. Inside the big circle there is a smaller circular button. Its radius is 14.5 mm. It's the most popular piece of electronic equipment in the world at the moment.

Object B. It has a surface area of 200,000 square meters. It uses 7,500,000 kWh of energy every year. It is covered in 60 tons of paint. It is 324 meters high. Its base is square. Each side of the square measures 125 m. It has had more than 200,000,000 visitors. It has 1665 steps. It is the most famous French landmark.

Object C. It is 19.3 meters tall. It is 70.6 meters long. It can carry 183,380 liters of fuel. It can travel 9,800 km without stopping. It can carry 175.3 cum of cargo. Its engines weigh 22,545 kg. It can carry 452 people. Its cabin is 6.1 meters wide. It was the world's biggest passenger jet for many years.

Object D. At its highest point, it is about 12 meters high. On average, it is about 6 meters wide. The oldest parts are more than 2000 years old. During its life, up to 1 million people have helped to build it. It was 6400 kilometers long. It is very famous. It is the world's longest wall.

Object E. It move sat 107,320 kph. It weighs 5,940,000,000,000,000,000,000 metric tons. Its circumference is about 40,075 km. Its total surface area is 510,072,000 square kilometers. It is the closest planet to you now.

Object F. It is 184.2 feet (56.12 m) long. It costs 1.7 billion dollars. It carries 835,958 gallons of fuel. It can travel at more than 17,500 miles per hour. It can carry from 2 to 8 people. It can carry 28,803 kg of cargo (63,500 lb). It weighs 2,041,166 kilograms at lift off. It weighs 104,326 kilograms when landing. Its wingspan is 78.02 feet (23.79 m). It is designed to fly at least 100 times. It flies at 190 to 330 miles above sea level. It is America's longest serving spacecraft.

Object G. It weighs 605 kg. It is 4545 mm long. It is 959 mm high. It is 1796 mm wide. Its wheel base is 3050 mm. It has 40 valves. Its cubic capacity is 2997cm^3. It has 7 gears. The diameter of its wheels is 13. It has 10 cylinders. It was the most successful car in the 2005 F1 season.

Object H. It isn't famous, but it is a world record-breaking machine. It weighs 12.3 g. Its power consumption is 3.5 W. Its battery weighs 3.7 g. It is 85 mm high. The diameter of its rotors is 136 mm. Its maximum flight time is about 3 minutes.

Object I. It isn't famous, but it is a world record breaker. It is 32 feet high. It is 111 feet wide. It took 35 minutes to take. It took over 1800 gallons of liquid to develop.

Object J. It isn't famous, but it is a world record breaker. It was built in Korea. Its engine has a power of 68,520 kW. It was made by Samsung. It is 336.7 meters long. It is owned by a Chinese company. It has a draught of 15 meters.[1]

Task 7. Read the text, find sentences with the verb to be and to have, translate them in the written form

The Car of the Future[2]

Is this "snail car" the car of the future? It does not resemble any of the cars we use today, and indeed it is very different and totally high-tech. But you won't see a car like this on the roads tomorrow. The future is coming, but not quite so fast. Here is the car of the fu-

[1] https://tefltastic.wordpress.com/worksheets/technical-english/measurements-superlatives-lp/measurements-superlatives-1/
[2] https://linguapress.com/intermediate/car-of-the-future.htm

ture! This car is the opposite of today's cars; today's cars are noisy and dirty, this one is silent and clean. Today's cars have wheels, this one does not. It moves like a snail, but much faster than a snail!

This car will use electric energy, not petrol (BrE) or gasoline (AmE); it will have batteries that can be re-charged instantly from chargers in the road. It will also be very easy to drive.

In fact, you won't need to drive it; it will drive itself. You will just need to tell the computer: "Go to X" and the car will go there. Also, it will reach X very quickly, much faster than today's cars. It will also be very safe and comfortable.

A lot of the technology already exists, but it is very experimental. Already today scientists are developing new materials for the surface of roads: in fifty years from now, perhaps sooner, some new roads will capture solar energy: they will store this energy under the road, and some cars will be able to use it.

However you probably won't ever drive a "snail car", even if you're under 20 today. This, perhaps, is the car of the year 2100, the car that your grandchildren will may be drive. Driving will be nice in the 22nd century! There is no pollution, no traffic-jams, no stress.

If, of course, we reach the 22nd century. With all today's problems of global warming, pollution, and natural resources, nothing is certain any more. Scientists have lots of ideas about the car of the future: but the future itself is perhaps less sure ...

7.1 Find English equivalents in the text

1. напоминать о	9. загрязнение
2. сильно отличаться	10. поглощать, захватывать
3. бесшумный	11. дорожное покрытие
4. двигаться как	12. пробки
5. природные ресурсы	13. мгновенно заряжаться
6. гораздо быстрее	14. легкий в управлении
7. бензин (2)	15. зарядное устройство
8. безопасный	16. хранить, аккумулировать

7.2 What are your ideas of the cars of the future? Share your ideas with other students

Task 8. Translate into English

1. Сейчас я студент первого курса.
2. В прошлом году я был еще в школе.
3. В нашей группе __ студентов.
4. Когда мы закончим обучение, мы будем инженерами.
5. Существует много видов инженерного дела. Мы будем инженерами-механиками.
6. Инженер – одна из самых востребованных профессий.
7. У нас много интересных предметов.
8. Мне трудно дается физика, но хорошо математика.
9. Студенческая жизнь очень насыщенная.
10. Мы часто работаем в лабораториях.
11. Я думаю, мне придется много работать, чтобы успешно сдать экзамены.
12. В школе у меня было гораздо больше свободного времени.
13. У меня было много друзей в школе, в университете у меня пока еще не так много.
14. Мне нравиться учиться в университете.
15. Я думаю, идея получить инженерное образование была хорошей.
16. Когда я закончу обучение, я планирую поступить в магистратуру.

Module 2

Task 1. Translate the sentences below in the written form

1. In his 1979 novel, The Fountains of Paradise, Arthur C. Clarke wrote about an elevator connecting the earth's surface to space.
2. The flat, coated-steel belt totally eliminates the metal-to-metal effect of conventional systems.
3. Working drawings often go through more revision store solve problems during production.

4. Most bolts have heads with hexagonal perimeters. These allow a spanner to turn them.
5. Nuts usually have a right-hand thread.
6. Turning is a technique for cutting components that have a circular cross-section.
7. It's important to ensure the joint fits to get her properly.
8. Powder particles are smaller than pellets.
9. A bridge consists of superstructure and substructure.
10. The aim of the experiment was to determine principal stresses and estimate the magnitude of stresses.
11. The accuracy of results depends on the number of elements used, the size of the elements, and the construction of the model.
12. You probably know all the common words for distances and dimensions, such as broad, wide, tall, high, long, short, low, far, deep and also its derivatives (broaden, widen, width, heighten, height, lengthen, length, shorten, lower, faraway, deepen, depth …).

Task 2. Give the correct present simple form of the verbs in parentheses

1. When (hold) the UPC a seminar in Electronics?
2. Many people (study) abroad thanks to Erasmus exchanges.
3. Mr. Walker (teach) Mathematics in the Engineering faculty.
4. Our post graduates (carry out) some research in Robotics regularly.
5. Why some experiments (cost) a lot of money?
6. Water (boil) at 100 °C.
7. When we heat metals they (melt).
8. Water and oil (not mix) when put together.
9. Some materials (be) very heavy to carry out.
10. This substance, when mixed with water, (cause) a chemical reaction.
11. The silicon rods used in the experiment (not weight) more than 10 g.
12. The sparks plug then (make) the ignition possible.
13. Good scientific reports (provide) useful data for future research.
14. While heated glass (become) very brittle.
15. Gold and silver (be) precious metals.

16. When (finish) your research work?

Task 3. Put the following sentences in order.

1. The plane first at leaves 6 a.m.
2. Reinforced is useful very in cases many glass.
3. The is round earth.
4. Moon the goes around the earth.
5. An earthquake can damage provoke serious.
6. This measures garden by 3628.5 metres.
7. My is thick approximately mouse pad one centimeter.

Task 4. Give the correct past simple form of the verbs in parentheses

1. The earliest humans (have) access to only a very limited number of materials.
2. The microstructure of a metal (be) first revealed in 1864 by the Englishman Henry Sorby who (develop) a technique for etching the surface layer of a polished metal.
3. Past efforts to reproduce the architecture of, e.g. a shell (not be successful).
4. The results (showed) that both components (be) polymers.
5. Zhao and Hancock (1995) (propose) design rules for tear-out failure in steel connections.
6. When they (install) the solar panels?
7. The system (not work) because the speakers had been wrongly connected.
8. How they (prepare) access to this mine?
9. Louis Pasteur (discover) the action of germs while studying fermentation in wines.
10. Electronics entirely (transform) the way we live and work in the 2nd part of the 20th century.

Task 5. Translate into English and answer the following questions true for you

1. Где и когда вы родились?
2. Где вы учились в школе?
3. Чем вы занимаетесь?
4. Кем вы будете, когда закончите обучение?
5. Какие предметы вы изучаете в университете?
6. Какие предметы вам нравятся?
7. Какие предметы вам не нравятся?
8. Сколько времени вы работаете на компьютере ежедневно?
9. Почему вы поступили в технический университет?
10. Когда был основан КузГТУ?
11. Кто был первым ректором?
12. Когда КузГТУ получил статус университета?
13. Кто сейчас ректор КузГТУ?
14. Сколько институтов и факультетов в КузГТУ сейчас?

Task 6. Read the text and translate it in the written form. Answer the following questions to the text

1. Who is Charles Babbage?
2. When and where was he born?
3. What did he study at university?
4. What did he invent?
5. What are the four essential parts of a modern mathematical computer?
6. Where can you see the first working version of Babbage's machine?

WHO invented the first computer? And when?[3]

The answer will surprise you: it was Charles Babbage, in the year 1832. Babbage, who was born in London in 1791, was a great mathematical genius.

[3] https://linguapress.com/advanced/babbage.htm

He was a natural inventor, and invented all sorts of new products. When he finished school, he went to study mathematics at Cambridge University.

Later, he got a job teaching at the university; and while Professor of Mathematics in this illustrious university, he designed his "first difference engine". This was, basically, a hand-operated mechanical calculator.

He took nine years to build a part of the machine. This machine, which is in the London Science Museum, can make complex mathematical calculations. It is a basic mechanical computer. Babbage dreamed however of more complicated machines. In fact, he did not only dream; he began to design them. The result was a series of "analytical engines" which were in fact powerful computers! His designs contained processors (he called them "mills"), control units, a memory (he called it a store), and an input / output system. These are the four essential parts of a modern mathematical computer! Alas, Babbage was born 100 years too soon! His "second difference engine" could not use electricity, since this had not yet become a usable source of power; so Babbage had to make do with mechanical systems. For this reason, the machine was big and very complicated, and very expensive. Though Babbage produced complete plans for the machine, he could not build it. It was too sophisticated for its age!

It was not until almost 160 years later that Babbage's "second difference engine" was finally manufactured. The first working version of this machine was built by the Science Museum in London, for the Babbage bicentenary in 1991. It can now be seen at the Museum; a second machine was then built for an American high-tech millionaire, who put it in the Computer History Museum, in Mountain View, California.

Babbage's analytical engines would have used "programmes" like those used in the textile industry to make complicated patterns; but they were never built. This brilliant mathematician really was too far ahead of his time!

Module 3

Task 1. Translate the following sentences in the written form

1. Passive voice is formed with the verb to be and Past Participles.
2. Passive voice is widely used in technical texts.
3. Several companies were surveyed for the purpose of this report.
4. The article was published in a scientific magazine.
5. When either fuel is burned, it releases poisonous gases which are carried up into the atmosphere and sometimes transported long distances.
6. The first and important thing to know is what all the tools and machines in the workshop are called.
7. Most technical instructions are given in the passive voice as the reader of a technical instruction or the person to be instructed needs.
8. In Japan electricity production was restricted after the Fukushima accident in March 2011.
9. Lots of small steps are involved in the development of a new machine.
10. A detailed evaluation of its application to this air quality evaluation is contained in Appendix A.
11. Kirchhoff's Voltage Law was confirmed by directly measuring the voltages in the circuit.
12. English is spoken in many countries.
13. The electric light bulb was invented by Thomas Edison.
14. The former subject can be added to the passive sentence if necessary, but this is not obligatory.
15. Before the first draft of a drawing is sent to members of the team, a decision is made about who need a copy.
16. Design formation is shown on drawings and written in specifications.
17. Engineers are sometimes criticized because they over design.

Task 2. Do the quiz discuss your answers with other students. Listen to audio Smart brain and check your ideas

Model: I think that the Zeppelin was invented by Count Ferdinand von Zeppelin, because their names are the same.

1900 1. The Zeppelin was invented by
a) Count Ferdinand von Zeppelin **b) The Write brothers**

1901 2. The safety razor was invented by
a) Tom Wilkinson **b) King Camp Gillett**

3. In the same year, the vacuum cleaner was patented by
a) Arthur Bosh **b) Hubert Booth**

1906 4. Cornflakes were invented by
a) William Kellogg **b) Mr. John Bread**

1919 5. The pop-up toaster was invented by
a) Charles Strite **b) Tom Pepper**

1927 6. The first quartz clock was developed by
a) Jim Quartz **b) Warren Morrison**

1930 7. Scotch tape was patented by
a) Paul Scotch **b) Richard G. Drew**

1942 8. The first electronic computer was built by
a) John Atanasoff & Clifford Berry **b) John Baird**

1946 9. The microwave oven was invented by
a) Samuel Koff **b) Percy Spencer**

1974 10. The post it note was invented by
a) Arthur Fry **b) Juliet Blanco**

1979 11. The first Walkman was launched by
a) Philips **b) Sony**[4]

Task 3. Translate the following sentences in the Passive Voice from Russian to English

1. Эксперименты проводятся в лабораториях.
2. Студентам преподают различные предметы.
3. Экзамены и зачеты сдаются два раза в год.
4. КузГТУ был основан в 1950 году на базе горного техникума.
5. Научно-исследовательские работы проводятся студентами под руководством преподавателей.
6. Много изобретений было сделано преподавателями и сотрудниками университета.
7. Студентам, успешно закончившим обучение, выдаются дипломы.
8. Студенты, не сдавшие экзамены, отчисляются.
9. Мы были зачислены в университет в августе.
10. Студенческие билеты были выданы в сентябре.
11. Курсовые и дипломные работы регулярно выполняются студентами.
12. Студенты обучаются по программам бакалавриата и магистратуры.
13. Многие исследовательские работы проводятся по заказу промышленных предприятий области.
14. Студенты КузГТУ проходят практику на ведущих предприятиях области.

Task 4. Read the text, find the sentences in the passive voice and translate them in writing

The story of Silicon Valley[5]

America was made in New York or Detroit, modern America is made in Silicon Valley. But what is "Silicon Valley", where is it? And why is where it is?

[4] from Upstream pre-intermediate
[5] https://linguapress.com/intermediate/silicon-valley.htm


San José, in the heart of Silicon Valley

It is not made of silicon; and it is not a river valley; but forgetting that, Silicon Valley is probably the most famous valley in the world. Although it is not the place where the first computer was built (that was Manchester, England), Silicon Valley, near San Francisco, was the birth place of the modern computer industry.

For this, we can say thank you to scientists at the universities in California, and to the Hippies of the 1960's.

It was in the nineteen-sixties when American "youth culture" really began. California, of course, already existed; but the Sixties Generation rediscovered it.

At the time there were really two different forms of youth culture; the "Beach Boy" culture on the one hand, and the anti-establishment hippies and radical students on the other hand; and they all dreamed of California.

For the Beach Boys, that meant southern California, where they could sing about surfing and cars; for the Hippies and radicals, it meant San Francisco, "flower power" and revolutionary new ideas. The campuses at Berkeley and Stamford, near San Francisco, were hot beds of new ideas, new technology, new culture, and new ways of living.

When they finished university, many of the best students did not look for jobs with big companies like Ford or Exxon. Instead they wanted to be free and run their own operations and stay in California, not far from San Francisco. Silicon Valley is thus a group of small towns, including Palo Alto and San José, a few miles south of San Francisco.

The high-technology industry was already present around San Francisco. Intel had been founded in 1968, and in the same year the first computer mouse was built at Stamford University. In 1970, Xerox opened a research center in Palo Alto. There were also other electronics companies, like Hewlett Packard, and Fair child, the world's first "semiconductor" company.

Then, in 1976, an electronics student called Steve Jobs started a small computer company in his garage; he gave it the same name as the Beatles' record company: Apple.

Very soon, more companies, like Seagate and Google appeared. "Silicon Valley" had arrived. There was even a sort of primitive Internet connecting many addresses in Silicon Valley, called the Arpanet.

Today, Silicon Valley is still the home of the computer industry; it is still full of high technology, but it is not the only center for high-tech in the USA. Today here are computer firms all over the USA and all over the world; but Silicon Valley still has the largest concentration of high-tech companies and research centers.

Microsoft, the world's biggest high-tech company, is not based in Silicon Valley. It is further north, near Seattle in the state of Washington.

4.1 Answer the questions to the text

1. What is Silicon Valley? Where is it and why?
2. Who founded Silicon Valley and when?
3. What is Silicon Valley like?
4. What was 1968 remarkable for?
5. Where is Microsoft based?
6. What happened in 1976?
7. What companies are there in Silicon Valley?

Module 4

Task 1. Give the correct present perfect simple / continuous form of the verbs in parentheses

1. In recent years, the emphasis on sustainability in Civil Engineering (increase) significantly.
2. *Engineers Without Borders* is a not-for-profit organization which (work) in developing countries since 2001.
3. Few researchers (investigate) the possibility of human-like locomotion in robots.
4. Sorry! The laboratory is in a mess. I (carry out) an experiment.
5. Group 1 (complete) the first assignment, but Group 2 (not start) yet.
6. Recent studies (show) that more efficient water management will be needed as global warming increases.
7. They (experiment) long but (not achieve) a desired result.
8. Since becoming aware of global warming, researchers (investigate) clean energy sources to replace fossil fuels.
9. The Kyoto Protocol (not achieve) the intended results as it has not been ratified by all countries.
10. Sorry! I'm late. you (wait) long?
11. In the past five years several car manufacturers (develop) hybrid vehicles.
12. I really need a break. I (revise) for the exam all morning.

Task 2. Read the following news report, which is an update on a major building project, and write the correct tense of the verbs in parentheses (use past simple and present prefect, sometimes the passive voice is needed)

The board of directors of Medway Medical Centre (announce) twelve months ago that an extension block would be built in the grounds beside the existing building. Although funding (not yet be approved), ProTecEngineering (complete) the design. The hospital CEO, Mr. Bernard Wilkes, (release) the design at a press conference yesterday.

While the new building is designed to blend aesthetically with the older building, Mr. Wilkes (emphasise) yesterday that sustainability was one of the key design criteria. 'Green building technology (be incorporated) at all stages of the design, as we (request) at the beginning of the project.'[6]

Task 3. Answer the following questions

Model: Have you ever signed a contract? – Yes, I have. I signed a contract two days ago. / No, I haven't. I have never signed a contract.

1. Have you ever spoken English with a native speaker? If yes when and where?
2. Have you ever been late for classes / work? If yes why?
3. Have you ever done any courses?
4. Have you ever passed exams?
5. Have you ever applied for a job / course? If yes? What course did you apply?
6. Have you ever been engaged in volunteering? If yes what did you do?
7. Have you ever had a summer job? What type?
8. How many phones have you had so far?
9. Have you ever fixed a car yourself?
10. Have you ever bought things on the Internet? If yes what did you buy?
11. How much coffee / have you drunk this morning?
12. How many books have you read this year?

Task 4. Translate the text and find English equivalents

1. жизненно важный	8. взрыв
2. проверка	9. угроза безопасности, риск
3. загореться	10. закоротить
4. отзывать, брать обратно	11. система охлаждения
5. восстановить репутацию	12. приводить к чему-либо, быть причиной
6. вырабатывать ток	13. перезарядка
7. перегревание	

[6] http://www.monash.edu.au/lls/llonline/grammar/engineering/tense/2.xml

Lithium-ion Battery Safety Concerns

This week has seen 50 planes of Boeing's Dream liner series grounded a mid safety concerns over the battery. The US and European aviation industries have said planes should remain grounded while checks are carried out on their lithium ion-batteries. They are worried that the batteries could leak thus corroding vital equipment and potentially causing fires. Remember when laptops were bursting into flames in 2006? It was the lithium-ion battery. Random explosions from overheating weren't a widespread problem, but nevertheless, lithium-ion battery manufacturer Sony, which came out with the first commercialized Li-ion battery in 1991, had to recall more than 6 million computers because of it.

In the couple of years since then, the Li-ion battery hasn't completely recovered its reputation for safety. Now you can see why putting it inside of a car makes some people a little antsy. Why is there a chance for explosion? Li-ion batteries work by separating its positive and negative sides by a thin layer, called an electrolyte. The electrolyte is perforated to allow the lithium ions to pass through from one side of the chamber to the other, thus generating a current. Tiny bits of metal that result from the manufacturing process can potentially get stuck in those perforations, preventing the ions from freely flowing. Pressure and heat can then build up, causing an explosion. Also, allowing the ions to move too quickly can lead to overheating as well. So how does the all-electric Tesla Roadster manage to pack 6,831 Li-ion batteries under its hood without risking a major blow-up? The Tesla's energy storage system that propels the car is equipped with a cooling system, which ensures the batteries don't overheat. It also regulates the speed of the flow of ions to keep them from re-charging or draining too quickly. Since car companies and scientists realize the broad potential of Li-ion batteries, they have poured time and money into finding ways to reduce any safety hazards. For instance, nanotechnology, the study of atoms and nanostructures, may be able to prevent those dangerous explosions. New nanomaterials, such as nanophosphate, aren't prone to shorting out like graphite, the traditional Li-ion electrolyte. And speaking of time and money, before Li-ion batteries make their grand entrance into the consumer automotive

world … What needs to be considered before Li-ion batteries come into the automotive world?[7]

Module 5

Task 1. Give the correct present continuous form of the verbs in parentheses

1. Some Industrial Engineers (work) hard for Forum 2003.
2. My boss (give) a lecture now.
3. Mandy (check) some balance sheets these days.
4. The quality control (inspect) the goods in the factory.
5. Most employees (enjoy) their holidays by now.
6. They (stop) the project for two weeks.

Task 2. Make the sentences in Task 1 negative

Task 3. Give the correct past continuous or past simple forms of the verbs in parentheses

1. When we (come), engineers (check) the apparatus.
2. The apprentice (clean) the tools, while the engineer (inform) the superior about the problem.
3. The production cycle (stop) while service engineers (identify) a fault.
4. The apparatus (work) correctly so the fuel consumption (increase).
5. The control panel (work), so you (cannot) control the machine.
6. A technician (make) an external visual inspection when he (hear) a crackling sound.
7. When we (see) that liquid lubricant (also leak) out from under the machine we (switch it off).
8. Our engineers (test) new equipment when the accident happened.
9. They (not follow) the safety rules while they (monitor) a new production line.

[7] http://auto.howstuffworks.com/fuel-efficiency/vehicles/lithium-ion-battery-car1.htm

Task 4. Read the text and answer the questions below

1. What are two skills engineers should have to be successful?
2. Why is it important for engineers to be creative?
3. What does "high demand" mean in the 3rd paragraph? How do you know?
4. A printing company may need engineers to design a machine to make magazines. What other type of companies might need mechanical engineers?
5. Would mechanical engineering be a good fit for you when you grow up? Why or why not?

CURIOUS ABOUT CAREERS: MECHANICAL ENGINEERING

Do you like to build with blocks? Are you curious about how solar panels turn sunrays into electricity? Have you wondered how planes stay in the air? Do you wonder why putting gas into cars causes the wheels to turn? Do you like to design and create new things? If you do, a career in mechanical engineering might be right for you!

A mechanical engineer is responsible for coming up with and designing mechanical systems. Mechanical systems can include machine design, heating and cooling equipment, power generation, and product design. Products like the latest cell phone begin with an engineer coming up with the idea.

Mechanical engineers are in high demand right now. That means that there are a lot of job openings for mechanical engineers, but there aren't enough people to fill those jobs. Because there is a high need for engineers, and the work requires specialized knowledge, engineers get paid more than some other careers.

To be a mechanical engineer, you need to graduate from college with a bachelor's degree. During your years in college, you will learn problem-solving and critical thinking skills that will help you to succeed as an engineer.

Problem solving is very important in the field of mechanical engineering. People in this career need to be able to think about problems in different ways to figure out the best solution. You also need to be creative, because you may need to make something that’s never

been made before. Attention to detail is important, as well. Many designs rely on a lot of little details that need to work together.
Mechanical engineers should also be very comfortable using a variety of tools, such as calculators, high-speed cameras, measurement tools, and computers to assist them in completing their job. There are many computer programs mechanical engineers use to create designs in 3D, run scenarios, and analyze calculations. Engineers also use computers for research.

As with many other jobs, mechanical engineers need to be able to meet deadlines and work well with other people. Some jobs can be done with just one person, but more often mechanical engineers are working on a team to complete a project. If an engineer can not manage his or her time well and misses a deadline, the entire team gets delayed, which is not good for the company. Some engineers work in an office, and some travel to different work sites while a machine or product is being built, so they can help solve any problems.

Mechanical engineering takes a lot of thought. It is a great career for people who like to make objects and machines work, solve problems, and be creative![8]

4.1 Find English equivalents in the text

1. превращать в	9. удовлетворительный, достаточный
2. являться причиной вращения	10. измерительные приборы
3. отвечать за	11. выполнять вовремя
4. создавать новое	12. не укладываться в сроки
5. находить решение	13. требует длительного обдумывания
6. решение проблемы	14. заставлять работать
7. преуспевать	
8. вычислять, отгадывать	

[8] http://www.k5learning.com/worksheets/reading-comprehension/5th-grade-5-mechanical-engineering.pdf

Task 5. Think about what knowledge and qualities are necessary for mechanical engineers. Discuss them with other students

Model 1: I think mechanical engineers should be creative because they have to invent and improve things.

Model 2: I'm sure mechanical engineers have to know economics to calculate advantages and disadvantages of improvements

Module 6

Task 1. Translate the following sentences. Mind conditionals

1. If you assume something is not going to happen simply because chances are slim, bad news – it will in fact happen at the worst moment possible.
2. If the solution were treated with a weak acid or with a very dilute solution of one of the stronger acids, weakly ionized hypochlorous acid would be formed.
3. We could easily understand, why engineers prefer to supply us with a.c. rather than d.c., if we remembered that current flows first in one direction.
4. We can still escape the worst if world agrees new climate deal and reduce greenhouse gas emissions, at least this is what science suggest us.
5. Unlesswedosomethingtocleanthisterribleenvironmentalmessourfuturewouldbeanythingbuthappy.
6. If your computer problems are stemming from missing and damaged DLL files, you can restore them by downloading them back onto your PC.
7. If you have computer problems, chances are, system repair software can help you fix it.

Task 2. Match the halves of the sentences 1–5 to a–h

1. If these tests produce positive results,
2. If rubber is cooled to –200 °C,
3. If safety measures had been followed,
4. If you want to study the files from the internet,
5. If we bought a new software package,
6. If you want to use this software package on more than one system,
7. If the goods had been sent by sea,
8. If we ran an additional test,

a. the accident would never have happened.
b. download them onto your computer.
c. we'd be able to do all the technical specifications in half the time.
d. we could estimate the experimental error.
e. they would have taken nearly two months.
f. it becomes brittle and will break.
g. we'll continue with clinical trials.
h. you'll have to get a site licence.

Task 3. Complete the sentences. Use your own ideas

1. If you're having trouble with an application not installing, it may be because ...
2. If the engine doesn’t start, it may be because ...
3. If you're clustering a lot of electronics together (like a home theater system), ...
4. If I want to go for research in MS of mechanical engineering area I should ...
5. If you focus on every day mechanics, you can think of ...
6. If the two-wheeler brake doesn't function properly, ...
7. If you drive through tunnels, radio or streaming audio ...
8. If you live in a place with spotty Wi-Fi, you ...
9. If your phone's battery gets uncharged very fast, ...
10. If you want to produce something innovative as a first year, ...
11. If you solve the problem second time, it ...

Task 4. Read the text and find English equivalents to the following words and phrases

1. директива, общий курс	9. изучение, исследование
2. устройство, механизм, план	10. разрушение конструкции
3. неудача, провал	11. недостаточные знания
4. пользующийся спросом, дефицитный	12. недооценивание
	13. недобросовестность
5. недостаточный контроль	14. достаточный, обоснованный контроль
6. недостатки дизайна	
7. экстремальные условия	15. избежать поломки
8. сочетание, совокупность	16. потеря свойств

Engineering Disasters and Learning from Failure[9]

The role of the engineer is to respond to a need by building or creating something along a certain set of guidelines (or specifications) which performs a given function. Just as importantly, that device, plan or creation should perform its function without fail. Everything, however, must eventually fail (in some way) to perform its given function with a sought after level of performance. Hence, the engineer must struggle to design in such a way as to avoid failure, and, more importantly, catastrophic failure which could result in loss of property, damage to the environment of the user of that technology, and possibly injury or loss of life. Through analysis and study of engineering disasters, modern engineering designers can learn what not to do and how to create designs with less of a chance of failure.

What Makes a Failure Into an "Engineering Disaster"?

Much of the reason why we consider an engineering failure to be an engineering "disaster" has to do with public perception of risk. For example, in 1992 roughly the same number of fatalities occurred in transportation accidents involving airplanes, trains, and bicycles. Yet the public perception of the risk associated with air travel is often much higher than that for trains and certainly for bicycles. This stems from two reasons:1) the large loss of life (and associated widespread news reporting) resulting from a single air crash, and 2) the air pas-

[9] http://www.matscieng.sunysb.edu/disaster/

senger's lack of control over their environment in the case of air or, to a lesser degree, rail accidents. Both of these reasons result in increased fear, and hence a higher degree of perceived risk.

Primary Causes of Engineering Disasters

The primary causes of engineering disasters are usually considered to be

- human factors (including both 'ethical' failure and accidents)
- design flaws (many of which are also the result of unethical practices)
- materials failures
- extreme conditions or environments, and, most commonly and importantly combinations of these reasons

A recent study conducted at the Swiss federal Institute of technology in Zurich analyzed 800 cases of structural failure in which 504 people were killed, 592 people injured, and millions of dollars of damage incurred. When engineers were at fault, the researchers classified the causes of failure as follows[10]:

Insufficient knowledge	36%
Underestimation of influence	16%
Ignorance, carelessness, negligence	14%
Forgetfulness, error	13%
Relying upon others without sufficient control	9%
Objectively unknown situation	7%
Unprecise definition of responsibilities	1%
Choice of bad quality	1%
Other	3%

Task 4.1 Answer the following questions to the text

1. What is the role of an engineer?
2. How must an engineer struggle to design?

[10] M. Matousek and J.Schneider (1976). Untersuchungen Zur Struktur des Zicherheitproblems bei Bauwerken, Institut für Baustatik und Konstruktion der ETH Zürich, Bericht No. 59, ETH.

3. How can modern engineers learn to create designs with less of a chance of failure?
4. Why is an engineering failure considered to be an engineering "disaster"?
5. What are the primary causes of engineering disasters?
6. What are three most frequent reasons of failures?
7. What are three least frequent reasons of failures?
8. How can we avoid failures?

Task 5. Read the text and find English equivalents to the following words and expressions

1. отсутствие, нехватка 2. ответственность перед работодателем 3. выполнять обязанности 4. избегать конфликтов 5. искажать, выставлять в ложном свете	6. выполнять условие контрактов 7. изучение конкретного случая, учебный пример 8. исходная / дополнительная информация

Engineering Ethics

Often, a deficiency in engineering ethics is found to be one of the root causes of an engineering failure. An engineer, as a professional, has a responsibility to their client or employer, to their profession, and to the general public, to perform their duties in as conscientious a manner as possible. Usually this entails far more than just acting within the bounds of law. An ethical engineer is one who avoids conflicts of interest, does not attempt to misrepresent their knowledge so as to accept jobs outside their area of expertise, acts in the best interests of society and the environment, fulfills the terms of their contracts or agreements in a thorough and professional manner, and promotes the education of young engineers within their field. Failures in engineering ethics can have many legal consequences as well, as in the case of a mall collapse in Korea.

Thirty five faculty members from around the country have created a number of case problems in several engineering disciplines which intertwine technical calculations with engineering ethics. These were

presented at a 1995 workshop at Texas A&M, sponsored by the National Science Foundation.

The site for Applied Ethics in Professional Practice Case of the Month Club created and maintained by then Professional Engineering Practice Liaison Program in the College of Engineering at University of Washington, provides the opportunity to review a particular case study which involves engineering ethics and then vote on which course of action should be taken. All cases are based on actual professional engineering experiences as contributed by a board of practicing engineers nationally. Background information on codes of ethics is also provided at this site.

4.2 Think about possible answers to the following questions. Discuss your ideas with other students

1. What is professional ethics?
2. Do you think it's important to have professional ethics? Why? Why not?
3. What does it mean to be an ethical engineer?
4. Is there any engineering ethics in Russia?
5. Do you think you'll be an ethical engineer in the future?

Task 5. Read the text and match the titles A-C to the passages 1-3

What Are the Dangers of Being a Mechanical Engineer?[11]

by Kristine Tucker

A. Unpredictable Scenarios
B. Unchartered Waters
C. Dangers

[11] http://work.chron.com/dangers-being-mechanical-engineer-26080.html

1. Mechanical engineers use science and math to design tools, equipment and machinery to help with a variety of industry needs. They often work with heavy equipment, power tools, motors and technical instruments to create, test and perfect mechanical devices. Because they work with toxic substances, powerful machinery and volatile materials, their work environment is susceptible to fires, explosions, structural failures and equipment malfunctions. Safety measures are vital to a mechanical engineer's job success.

2. Developing and testing mechanical prototypes is an exciting part of the job, but it often involves pressing the boundaries of what tools, machinery and equipment can do. Mechanical engineers must test the limits to make sure equipment is functioning properly, has fully developed safety measures and is ready for commercial use. They often use electric generators, internal combustion engines, industrial production equipment, power tools, elevators and conveyor systems to build and test engines and machines, according to the Bureau of Labor Statistics. Sharp blades, running belts, high-powered equipment, metal cutters, and drills expose mechanical engineers to many types of injuries and accidents on the job.

3. Mechanical engineers don't just work in testing laboratories. They often work on site at locations that aren't well-suited to the job demands. For example, a mechanical engineer might need to address rail car problems in a subway while passengers and crew members anxiously await assistance. Or, an engineer might be hired to work on equipment that is confined to a small space with limited accessibility. As a result, engineers must prepare for unexpected situations by applying security measures on the fly. They might not be aware of leaky hoses, structural flaws, or dangerous situations until they arrive on location and are asked to trouble-shoot problems.

Task 5.1 Find English equivalents in the text

1. машинное оборудование	10. механизированный, приводной инструмент
2. инструментарий	11. подходящий
3. придумывать, разрабатывать	12. ограниченный доступ
4. отрава, ядовитое вещество	13. неожиданная ситуация
5. устройство, прибор	14. протекающий

6. меры безопасности 7. подверженный чему-либо 8. летучий, быстро испаряющийся 9. работать правильно	15. структурный недостаток 16. опасная ситуация 17. найти, обнаружить повреждение / проблему 18. быстро, налету

Module 7

Task 1. Think about the qualities a mechanical engineer should have. Make a list of qualities and reasons. Discuss your ideas with other students

Task 2. Read the text and fill in the chart below. Do you agree with the qualities they suggest? Give your pros and contras

quality	reason (why)

What Are Three Personal Characteristics of a Mechanical Engineer?[12]

by Neil Kokemuller

A mechanical engineer uses computer software programs to design or redesign various types of mechanical devices, such as engines, machines and robots. While technical abilities and math skills are vital to success, top mechanical engineers also possess certain personal qualities, including creativity and strong communication and problem-solving skills.

Engineering is a field of innovation. Mechanical engineers develop new equipment and products used by customers to optimize production or improve their work processes. Creativity is an essential part of developing or improving devices so they are of good quality, meet space or weight limitations and achieve the cost objectives of customers. Much of the development process involves brainstorming new ideas and testing them through trial and error.

[12] http://work.chron.com/three-personal-characteristics-mechanical-engineer-25155.html

Though engineering is often viewed in purely technical terms, you must also have strong communication skills to meet the needs of clients and other stakeholders. In an engineering firm, you must listen effectively to managers to understand their directions and carry them out properly. You must also articulate the progress of a project and provide accurate information on any issues that crop up. If you work independently, or interact with clients, you need to understand client requirements, ask appropriate questions, and provide updates as you work toward development and production goals. In a supervisory position you might also lead a team that helps with research and design, so you must be able to communicate the goals of the project.

Mechanical engineers are, above all else, problem solvers. They use math skills and analytical abilities to spot problems and resolve them. This is important in the development process so you can ensure that the devices you create do what clients need them to do. It is also important when you are called on to repair problems with existing devices. For example, you might have to recalibrate testing equipment, fine-tune specifications or adjust materials used in production to get the desired results.

While some mechanical engineers are born with important personal characteristics, many develop both technical and personal skills during college. The standard requirement for a mechanical engineer is a bachelor's degree in the field. You can also earn a master's degree in mechanical engineering if you want to get into higher-level positions or management. Some schools have combination programs that let you earn undergrad and graduate degrees in five to six years.

Task 2.1 Find English equivalents in the text

1. программное обеспечение 2. жизненно важный 3. оптимизировать 4. улучшать 5. увидеть, определить проблему	6. удовлетворять, соответствовать ограничениям 7. ясно излагать, формулировать 8. обновление 9. техническая терминология 10. студент старших курсов

Task 3. Rewrite the following precautions using the phrases in the box to add emphasis

at all the times •every single • it's crucial • it's essential • it's vital under no circumstances

Model: *The fire exit should always be kept clear. – The fire exit should be kept clear all the times.*

1. It's important to test that the circuit is isolated.
2. You should reset the alarm routinely when you start the system.
3. It's a good idea to check that the cable is not damaged.
4. It's recommended that you should only store n on-flammable materials in this zone.
5. Nobody should enter the restricted area without permission.
6. Before pressurizing the system, make sure all the connections are tight.

Task 4. Fill in the gaps in the following text about the vernier caliper (Fig. 1) with the words from the box below[13]

fixed jaw | movable jaw | depth bar | vernier scale | slider | inside jaws | main beam (bar) | scale | clamp screw | outside jaws

When it comes to using a vernier calliper, the first thing a worker has to do is to decide where to measure – he / she can either use the (1) … for the outer edges of the work piece or the (2) … for the inner diameter of a hole, etc. For both kinds of measuring he / she has to press the (3) ... against one side of the work piece and then move the (4)…along the (5)…until it reaches the opposite corner. Afterwards, he/she can either read the measurement directly or use the (6) … to ensure that the vernier caliper can be taken away from the work piece without moving the jaws and thus changing the result. The worker can subsequently read the precise measurement from the (7) … . In order to take measurements which need to be more accurate than 1mm, the

[13] http://www.europa-lehrmittel.de/downloads-leseproben/79756-1/856.pdf/

(8) … can be used. The (9) … also contains a (10) … which enables the worker to measure, e.g., the depth of a hole.

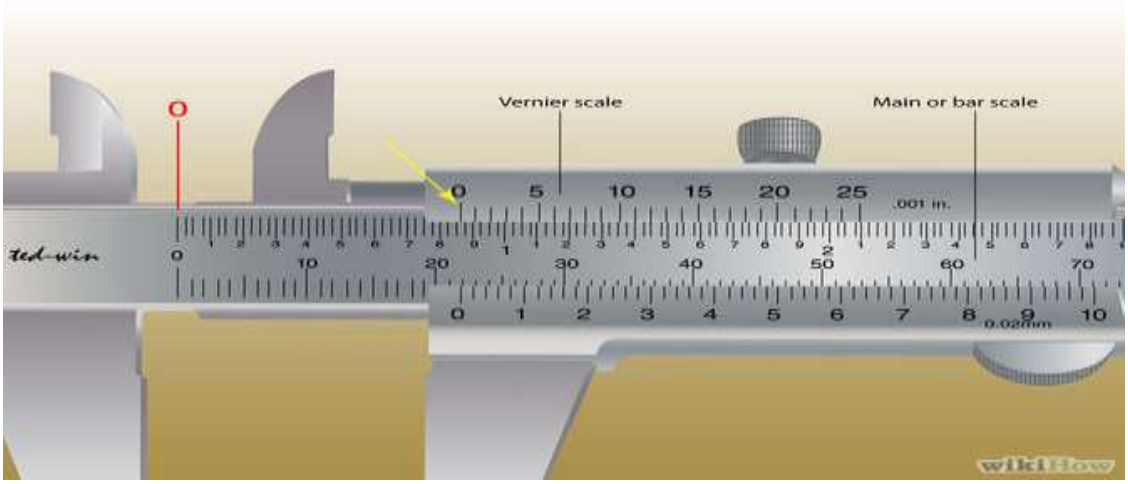


Fig. 1

Task 5.Translate the following sentences. Mind the modals

1. The first differentiation has to be made between gauges and measurement equipment.
2. The most common instruments in mechanical engineering are vernier calipers or callipers rules which can be used universally in the workshop.
3. Every engineer should at least have basic knowledge of the units of the imperial system and how the conversion between the two systems works.
4. Most metals can withstand high mechanical stress, but they do not have a high resistance to chemical stress and oxidation.
5. The statue must not be subjected to shock. Sudden drops, even of a few millimeters, are out of the question, given the fragility of the sculpture, especially at its corners and edges, which can be damaged easily.
6. Any accessory equipment may be used, within the limits of technical possibility and reasonable cost.
7. No holes or grooves may be cut in the statue.
8. A new steel outlet pipe must then be welded onto the opening.
9. The existing paint must then be removed from the external surface of the tank, by shot-blasting.

Task 6. Watch a video Day at Work - Mechanical Engineer and answer the following questions

1. What is the character's name?
2. What does he work for?
3. What does he work with?
4. What is the product he has recently worked on?
5. What does a development cycle consist of?
6. What educational institution did he graduate from?
7. What was used to draw the design?

Task 7. Find more information about engineering / famous engineers and their achievements / unusual engineering projects etc. and make your presentation. Use the words and expressions from Appendix

Module 8

Task 1. Translate the following phrases. Mind participles

1. engineering goods 2. based on oil 3. engineering applications and innovation 4. relating to quality assurance 5. problem-based learning 6. notions underlying the 'fundamentals' approach 7. facilitated by engineering 8. promoting the relevance of engineering	9. raising, networking, cooperation and support 10. borrowed from the earlier activity 11. capacity-building skills 12. including such specific issues 13. reduced noise 14. moved object 15. heated parts 16. controlling device 17. transmitting signal

Task 2. Translate the sentences. Mind participles

1. Studying Newton's work «Principia», a young physicist discovered a mistake in the calculations.
2. Having designed "green" brakes, the engineers started complex tests.
3. Carrying out experiments in a lab one should be very attentive.
4. A new electronic instrument will calculate how far one can drive on the fuel left in the tank.
5. The engine tested showed that it needed further improvement.
6. Scientists are experimenting with a system allowing drivers to see better after dark.
7. The system being tested can increase the safety and fuel efficiency.
8. Having been tested, the computer system was installed at a plant.
9. Soon the night-vision system designed will be available.
10. The synthetic rubber has a lot of valuable qualities that can be changed, if desired.
11. Recently there have appeared battery-powered cars.
12. Having been heated, the substance changed its properties.
13. Being provided with batteries an electric car can develop a speed of 50 miles an hour.
14. When mass produced, electric and hybrid cars will help solve ecological problems of big cities.
15. A fault undetected caused an accident.
16. Though first developed for military purposes, radar can be used in modern cars.[14]
17. Compared to the snail-paced evolution of the human species, we have to wonder if we'll be able to manage the increasing complexity of technology or if the dystopian vision of some futurists will come true: machines will become 'alive' with artificial intelligence and not just roam the earth but also rule it.
18. Every day new and exciting tech gadgets are announced – like the self-driving car or phone that you can wear like a watch (still no flying cars yet, unfortunately).

[14] http://narfu.ru/upload/iblock/cfc/grammer3_4.pdf

19. Machines will roam the earth, toiling in factories, taking our children to school, delivering babies, cleaning the streets, and other such tasks, which will make them seemingly indispensable to us.
20. The increasing sophistication of Technology from the steam engine and discovery of electricity to telecommunications, the Internet and biotechnology can be seen as a haphazard confluence of the breakthroughs of geniuses.
21. The rules of Technological evolution thus make a strong argument for accelerating evolution.
22. Technology, according to Arthur, spawns new generations of products by using existing components, a phenomenon he calls combinatorial evolution.[15]

Task 3. Complete the sentences with proper forms of participles using the verbs in parentheses

1. You can measure the force (act) on the body.
2. The force (apply) to the body was measured.
3. (Graduate) from the University, he began to work at an office.
4. The engine (test) required no improvement.
5. (Make) these experiments we can compare the weight of elements.
6. The substances (identify) were described in his report.
7. (Listen) to the lecture, students usually make notes.
8. There are several subjects (study) optionally.
9. A system is a good mixture of integrated parts (work) together.
10. Input is the information (present) to the computer.

Task 4. Think over the following questions and share your ideas with other students

1. What is your dream car? What make is it?
2. What's your dream car like? What features has it got?
3. Look at the pictures of the cars of the future. Which one do you prefer?
4. What are the next big features for cars in the next ten years?
5. What is a hybrid car?

[15] http://bigthink.com/hybrid-reality/the-evolution-of-technology

Task 5. Match the following words on the left to the most realistic measurement on the right

1. Wheelbase	**a. 1.62 m**
2. Engine Power	**b. 3.5 L / 100 km**
3. Battery Capacity Width	**c. 2.35 m**
4. Maximum GVW (Gross Vehicle Weight)	**d. 120 km/h**
	e. 4 people
5. Driver Motor Power	**f. 50 kWt**
6. Maximum Speed	**g. 30 kWt**
7. Mileage	**h. 20 kWt**
8. Seating Capacity	**i. 700 kg**

Task 6. Read the text and translate it. While reading answer the following questions

1. What is special about hybrid cars?
2. What are hybrid cars often able to use?
3. How does an electric motor in a hybrid car function?
4. What happens to a conventional car when it is operating under normal conditions?
5. What does a hybrid system do?
6. What does the hybrid's electric motor do?
7. What are benefits of using hybrid cars?

1. How Do Hybrid Car Engines Work?

The hybrid design combines a high-efficiency gas motor with an electric motor on the same drive train. Independently, electric drive and gasoline drive vehicles have a range of advantages and disadvantages. By combining both of these in one package, a hybrid vehicle is able to garner the benefits of each option. The gasoline motor is just as functional as in a normal vehicle and runs like the engine in any comparable conventional car. Hybrid cars are often able to use motors with a smaller displacement than a conventional car, because of the addition of the electric drive system. The electric motor can function as a "helper" to the gas motor; when the vehicle needs extra power the electric motor activates and helps drive the car.

2. The Electric Drive System

A gasoline car actually wastes a good deal of energy when operating under normal conditions. The hybrid system harvests the power that is usually lost and stores it in the form of electricity. The batteries in a hybrid act like an extra gas tank that is able to fill and refill itself while the car is operating. Every car generates electricity to work, but most of that energy is wasted. The hybrid car stores that energy to be used later. The hybrid's electric motor not only assists the gas motor with acceleration and power, but it is able to function independently as well. That means that when the vehicle is operating under conditions where the electric motor can drive the vehicle on its own, the gas engine shuts down and the car relies solely on electric power. Every second that the car's gas motor doesn't have to run is a second that the car doesn't have to use gasoline.

3. Unique Advantages

There are quite a few benefits of using a hybrid drive system. A hybrid car is able to use electric power to operate which is much more efficient. However, it can also use gas power when necessary. One of the biggest down sides of an all-electric vehicle has to do with range; since the batteries act as the car's "gas tank" once the power in the batteries has discharged, the car can't be driven until they have been refilled. The recharging process can take hours, and that's inconvenient for long trips.

The hybrid can operate on gas alone, which means the car has two "gas tanks", the batteries that power the electric drive system, and the conventional gas that fuels the gasoline engine. Hybrids are also able to save power other ways by using systems like regenerative braking. This is one of the reasons that hybrids are able to achieve such excellent gas mileage in city driving conditions. Regenerative

braking systems harvest the energy that it takes to stop the car once it is moving. In a normal car all this energy is wasted as heat, but in a hybrid it is stored in the battery as power for the electric drive system.[16]

Task 7. Think about possible problems that can occur with Hybrids and fill in the chart below. Use the internet to find the information if necessary, then make your presentation on the topic

Electronics	Design	Efficiency

Module 9

Task 1. Think about technology and try to answer the following questions. Discuss them with your group

1. Are you generally optimistic or pessimistic about how technology will affect our working lives and leisure in the future? What might the positive and negative changes be?
2. What are the present trends in technology and its use?
3. Which might continue, and which might change?
4. What recent invention or a piece of technology will have the most impact on our lives, do you think?
5. How do you picture daily life in 2050 (work and leisure)? Describe a vision of the future and your partner will say when they think that might come true. Do you agree on the date?

[16] *adapted from How Stuff Works.com*

Task 2. Complete the table using the words with the same roots

noun	adjective
	noisy
	dirty
	safe
	reliable
	electric
	warm
energy	
stress	
science	
skill	
use	
globe	
fault	
speed	
comfort	
profession	

Task 3. Make opposites of the following words using the prefixes in the box

ab- • dis- • im- • in- (×4) • ir- • mal- • over- • ir- • un-

1. correct
2. undersized
3. adequate
4. detected
5. normal
6. sufficient
7. proportionate
8. regular
9. balance
10. function
11. operable
12. solvable

Task 4. Read the text and answer the following questions

1. What do we use energy for?
2. Where does the house in the photo take energy?
3. How is the house lighted during the daytime?

4. What happens at night? Where does the house get energy?
5. How is the house heated?
6. How is the house provided with water?
7. Do you think the houses like this are possible in our climate? Prove your answer.
8. Can you suggest ways to use less energy?

Living without Energy

Everyone says that we must use less energy! But how? That is the big question.

In this article, you can read about the house of the future, which uses hardly any energy at all.

Most houses use energy – lots of it. We use energy for heating, lighting, for running our household appliances – TV's, washing machines, fridges, and so on. In winter time, most houses use dozens of kilowatts of electricity every day, or the equivalent in gas.

The house in the photo, on the other hand, uses virtually nothing: most of the energy that it uses comes straight from the sun, the wind or the ground. This is an experimental house at the University of Nottingham, and it could be the kind of house that most people are living in fifty years from now.

During the day time, it is rarely necessary to turn on an electric light, even in rooms without windows. Sunlight, or daylight, is "piped" through the house, into each room, through special high-reflection aluminium tubes. You can see how well they reflect light, by looking at the reflections of the faces in the picture!

At night, of course, energy is necessary – but most of this comes from the sun or the wind. The house is fitted with photo voltaic solar panels that generate electricity during the day time and a wind turbine power generator too; electricity from these can be used directly, or else stored in batteries, and used when it is needed.

For heating, the house uses direct solar energy (sunshine heating water that circulates through a radiator system), or geothermal energy. This takes low-level heat out of the ground, and uses a heat-pump to

convert it into high-level heat for use in radiators – the same principle as a refrigerator, but in reverse.

As for water, most daily needs are provided for by the house's own supply; rainwater is collected on the roof, filtered, and used for all toilets, baths and showers.

If, one day, most people in developed countries live in houses like this one, most of today's pollution will have disappeared, and global warming may be a problem of the past.

4.1 Match the words with the same meanings

1. fitted	a. provision
2. generate	b. backwards
3. supply	c. from under the ground, from the earth
4. store	d. conserve, keep
5. geothermal	e. equipped
6. irreverse	f. make, create

Task 5. Think of the ways to use less energy at university / home / streets, etc. Make your presentation. Use words and expressions from Appendix

Module 10

Task 1. Translate the following sentences. Mind infinitives

1. It's nearly impossible to forecast in detail life in 2110.
2. We will be joined by simple biological creatures designed synthetically in the lab, and of course, machines.
3. Brian Arthur is arguably the first person to tackle the question of the origin and evolution of machines, eloquently laid out in his book, The Nature of Technology.
4. When it comes to education, students are more dependent on calculators and computers to solve simple equations; in this case they cannot train their brains to solve a simple task which makes them lame in class.

5. A good example is the 3G / 4G broadband, small businesses have taken advantage of this super fast internet to reach target markets with less costs of operation.
6. Users of mobile phones demand simplicity and more functionality, which has forced mobile phone manufactures to develop computer minded smart phones, which are so easy to use, but also they come with more functionality compared to the type of mobile phones we used to have in the past.
7. These new and exciting discoveries are so innovative, fresh, and exciting that we've completely come to take for granted the countless inventions that were considered cutting edge just a short time ago.

Task 2. Look at the pictures and say how telephones have improved / changed .Use the ideas below. You can use your own ideas

Model: First phones were fixed line phones. First phones had receivers.

cordless • apparatus • disk • buttons • display screen • programmable • portable • fixed line • receiver • dial pad • touch screen • send messages • internet • camera

2.1 Look at the picture and say how mobile phones have changed: size, weight, shape, functions, accessories etc.

Task 3. Match the words / phrases with the same meanings

1.	breakthrough	a)	client
2.	cofounder	b)	pity, disadvantage
3.	customer	c)	extremely competent
4.	genuine	d)	taking place
5.	highly skilled	e)	put on the market
6.	platform	f)	domestic animal
7.	in the making	g)	participation
8.	inconvenience	h)	one of the creators
9.	launch	i)	who used to be
10.	involvement	j)	real, authentic
11.	from a distance	k)	most modern possible
12.	formerly	l)	new development
13.	perform a handstand	m)	ability to move
14.	lbs	n)	begin to sell
15.	power station	o)	from a distance
16.	licence	p)	made in a limited number of units
17.	limited edition	q)	site, situation, place
18.	location	r)	pounds
19.	motor capabilities	s)	allow the use of
20.	pet	t)	stand on one's hands, or one's front feet
21.	remotely	u)	adapted to
22.	state-of-the-art	v)	place where electricity is generated
23.	tailored to	w)	basis

Task 4. Read and translate the following text into Russian in the written form. Find sentences in the Passive

Meet RoboDog

1. RoboScience, a UK company specializing in commercial robotic technology, recently launched its RS-01 RoboDog – the world's most powerful, most advanced and largest commercial legged robot. Compared to other robotic animals, such as those produced by Sony, this new invention is the "Formula 1" of robotic pets.

Technical and design breakthroughs made during the creation of this remarkable new robot will form the platform for next-generation lightweight robots that will automate many ordinary tasks and eliminate human involvement in high-risk commercial and military environments.

2. Nick Wirth – formerly a designer of Formula One racing cars and co-founder and technical director of RoboScience – and a small team of highly-skilled specialists created the RoboDog in only seven months using a state-of-the-art computer-aided design tool provided by software house UGS.

3. Mark Oates, co-founder and marketing director of Northampton shire based RoboScience, said, "All legged robots now for sale are nothing more than entertainment. This is an advanced computer in animal form – it's history in the making. We have done what was thought impossible – creating a robot that is light and strong, yet large enough to show the true potential of legged robotics that are genuinely useful to human life." The RoboDog will be sold as a hand-made limited edition product tailored to the customers' requirements. A maximum of 200 robots will be offered for sale worldwide over the course of this year at a price of £20,000.

4. The RoboDog is the size of an adult Labrador and is powerful enough to raise itself from the ground carrying a five-year old child. Its sophisticated motor capabilities and balancing software allow it to climb obstacles and perform handstands, and its motion and colour detection sensors enable it to find and kick a football. It connects to the

Internet via a wireless network, and can be controlled from a PC. It can also recognize sixty oral commands.

5. Production versions of the RoboDog will allow owners to view locations remotely via an on-board camera or have the RoboDog access and read aloud e-mails. The RoboDog is 820 mm long, 670 mm tall and 370 mm wide and thanks to its advanced carbon-fibre and Kevlar construction, it weighs only 12 kg and can operate independently for 1.5 hours.

6. The manufacturers intend to licence elements of the RoboDog technology to companies in fields as diverse as industrial automation, special effects, security and military services. Mark Oates adds, "For companies struggling with the limitations of current robotics technology, this is – quite literally – tomorrow's world today! This RoboDog also proves that legged robots can now have the size and power to perform in high-risk environments, whether that is a power station or a mine-field. After all, the loss of a robot is an inconvenience; the death of a human being is a tragedy."

7. The Robodog has been designed and developed in a remarkably short space of time. Nick Wirth says "This is breakthrough technology created at breakneck speed."

4.1 Find English equivalents in the text

1. начинать, выпускать на рынок	9. ручной работы
2. по сравнению с, в отличии	10. ограниченный выпуск
3. достижение, успех	11. ширина
4. нового поколения	12. вес
5. легкий	13. работать независимо
6. устранять, заменять	14. промышленная автоматизация
7. рискованный, опасный	15. безопасность
8. автоматизированный	16. потеря
	17. выполнять

Task 5. Think about inventions. What do you think is necessary to invent. Share your ideas with other students

Appendix

SOME PHRASES FOR ACADEMIC PRESENTATIONS

Introduction (after greeting the audience and introducing yourself or being introduced)

The subject / topic of my presentation today will be…
Today I would like to present recent result of our research on…
What I want to focus on today is…
Outlining the structure of the presentation I will address the following three aspects of…
My presentation will be organized as can be seen from the following slide.
I will start with a study of….
Next, important discoveries in the field of … will be introduced.
Finally, recent findings of … will be discussed.

Introducing a new point or section

Having discussed …, I will now turn to …
Let's now address another aspect.

Referring to visual aids

As can be seen from the next slide / diagram / table…
This graph shows the dependency of…versus…
The following table gives typical values of…
In this graph we have plotted … with…

Concluding / summarizing

Wrapping up…
To summarize / sum up /conclude…

Inviting questions

Please don't hesitate to interrupt my talk when questions occur.
I'd like to thank you for your attention.
I'll be happy / pleased to answer questions now.

Dealing with questions

I cannot answer this question right now, but I'll check and get back to you.

Perhaps this question can be answered by again referring to /looking at table…

PROBLEM-SOLVING CHECKLIST

1. User's observations: nature of fault, circumstances of fault, external factors
2. Process of elimination
3. Identify the failure
4. Determine action and urgency

Additional Self-Check activities

Task 1. State the form of the given infinitives

To have received, to be discussed, to be talking, to have been developed, to have been lasting, to create, to be waiting, to have been ordered, to prove

Task 1.1 Give all the possible forms of the following infinitives

To discover • to sell • to imitate • to write • to clean • to buy • to break • to motivate • to send • to innovate • create

Task 2. Translate the following sentences into Russian

1. Please remember to check the bill of materials.
2. We tried to mix the two chemicals that you delivered.
3. The employees like rotating jobs, as it increases their motivation.
4. We like to use a subcontractor to maintain this equipment.
5. Computer music is any music in which computers are used to transmit musical instructions to electronic instruments or live performers.
6. The purpose of this test is to determine the mechanical characteristics of the material.
7. Data to be communicated can include pitches, dynamic levels, timbers and other elements.

8. The apparatus to be assembled is very complicated.
9. To carry out this research work requires special knowledge.
10. It is quite necessary for him to make a great number of calculations to solve the problem.
11. We know silver to be the best of conducting materials.
12. Michael Faraday had little chance to get an education.
13. Radio and television continue to develop and to find wider application in science and industry.
14. It was easy for our mechanic to repair this device.
15. A material which allows electricity to flow through it is called a conductor.
16. These metals were the first that were used in industry.

Task 3. Complete the sentences with infinitives of the following verbs

to produce • to pitch • to instigate • to prepare • to concentrate • complete • to develop • to meet • to apply • to use • to communicate

1. The Master of Science in Innovative Technology Engineering degree aims **a**___ graduates with strong skills in critical thinking and with a creative attitude necessary **b**___ future developments in the field of Engineering Technology.
2. The course aims ___ students for a rewarding career in industry or academic research. In addition, the course will facilitate the development of a set of personal and professional attributes that will allow them greater flexibility in the development of their own career options.
3. The student must also ___ an applied programme consisting of a Research Dissertation and an Industrial Research seminar series. The programme is designed ___ he student's knowledge and skills in strategies for innovation management, product design and development and optimum routes to market.
4. International students are required ___ the WIT postgraduate TOEFL (600)/IELTS (6.5) English Language requirement standard. Students from other associated engineering and science disciplines are welcome ___ .

5. Due to the fact that the Distance Education system is a large automated self-contained resource it is expedient ___modern intellectual approaches of creating an individual path and rapid adjustment of the educational process.
6. The experienced innovator possesses ability ___ his position in any environment.
7. The innovator may have only 30 seconds **a**___ the idea and needs **b**___ quickly.

Task 4. Read the text and answer the question below

What is special about modern engineering training?

Innovative ability training has been an important aspect of mechanical professional personnel training, the effective innovation capacity-building programs and measures are actively explored at home and abroad. Well-known universities research the CDIO (Conceive – Design – Implement – Operate / Придумывай – Разрабатывай – Внедряй – Управляй) engineering mode, which is Innovative education model-oriented theory and practice. Many countries are to carry out the reform of engineering education to help students exercise the innovation capability in practice, for example, in mechanical, chemical, biological, municipal, construction, electronics, transport engineering and other majors, implement the CDIO teaching reform, to develop innovative engineering talent; implement the CDIO teaching in the mechanical design courses of the mechanical engineering sophomore and improve the positive active learning; develop training of innovation and new product concepts and innovative ideas for engineering students in their first phase; set engineering innovative curriculum in the freshmen of mechanical engineering, and strengthen their innovation practice in the follow-up professional learning; develop students' innovative ability through product development; improve students' mastery of knowledge machinery through reforming teaching programs and settings the explore classroom to.

Task 5. Think over the questions below and share your ideas with your group

1. What is innovation? Is it the same as development?
2. What qualities should a person have to innovate?
3. What subject should future innovator study to be successful?
4. What facilities do you think are necessary to innovate?
5. In what fields do you think innovations will be made in the future?
6. What innovations are necessary in education and why?
7. How can innovation change our life in the future?

Task 6. Complete the table using the words with the same roots

noun	**adjective**
	noisy
	dirty
	safe
	reliable
	electric
	warm
energy	
stress	
science	
skill	
use	
globe	
fault	
speed	
comfort	
profession	

Task 7. Watch the video Mechanical Engineer- Expectations vs. Reality and answer the following questions

1. What's Nam's job?
2. What does he do at work?

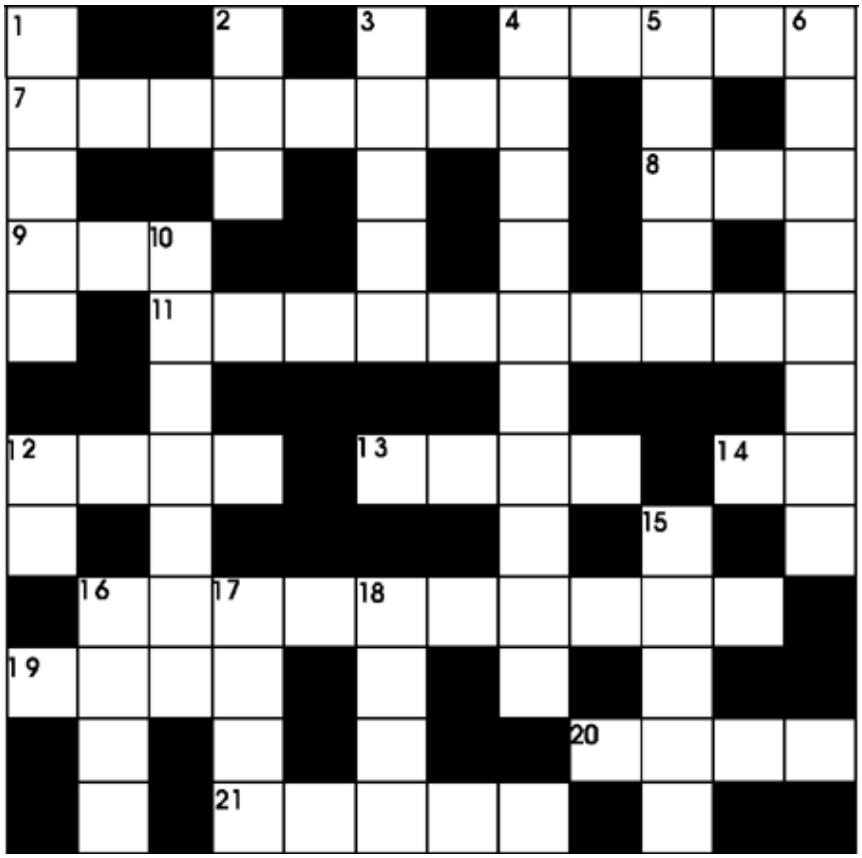
3. How long has he been working?
4. Does Nam have hands on a lot?
5. Does engineering woks include a lot of math? What type of things were mentioned?

Task 8. Watch a video Mechanical Engineer- Expectations vs. Reality and fill in the chart below then answer the questions.

1. What do mechanical engineers have to do with?
2. What does mechanical engineering collaborate with?
3. Why is mechanical engineering called adaptable discipline?
4. What do mechanical engineers design?
5. Why is mechanical engineering becoming more and more involved in policy?

expectation	reality

Task 9. Do the crossword



CLUES ACROSS

4. Energy, force.
7. Scientific work in new fields.
8. A source of salt.
9. A unit of electrical resistance.
11. A new exercise carried out by a scientist.
12&13. A serious problem affecting some forests.
14. Carbon monoxide.
16. Where many scientists do their work.
19. Very small unit of living matter.
20. Unit of electrical power.
21. Liquid necessary for most forms of life.

CLUES DOWN

1. Without it, things remain theories.
2. To become solid.
3. Mr. Nobel created one for physics.
4. Men whose field of work is physics.
5. Unwanted matter.
6. It occurs when certain chemicals are brought together.
10. The profession in which we find doctors and nurses. (adj.)
12. Chemical symbol or a precious metal associated with the Klondike.
15. Functional part of a living body
16. A common heavy metal
17. Do this to extinguish a candle or a small flame
18. An oxide of iron ... produced by the action of water.

Task 10. Word formation charts – fill in gaps with a proper form of the word:

Concept noun	**Personal noun**	**Adjective**	**Verb**
access	accessor	accessory /	
	analyst		analyse
beginning		beginning	
building	building /	building built (built-in, built-up)	build

Concept noun	Personal noun	Adjective	Verb
constructing / construction		Constructed /	construct
informing /	informer	informed / informative	
keeping / keep	keeper		keep
link /……/ linkage	linker		link
…… / performing		performing	perform
reminder		remindful	remind
sending	sender		send
subjecting / subject	subject	subject /	

Task 11. Read this passage, find conditional sentences and define their types

For each of the past eight years, Janice and Kurt have spent their vacation time at home, either working in the garden or fixing up the house. This year, however, they are planning to spend their July vacation somewhere else. They've checked the Internet for weather information about areas of the country they might like to visit. They are really eager to travel somewhere soon. In fact, if they had free time right now, they would take their vacation immediately, but they can't leave right now. They still have a couple of months to explore their options. So far, they have learned the following information. If they want to spend their time near the water, they will have a hard time choosing among dozens of outstanding beach resorts. For example, if they go to the beach in Atlantic City, New Jersey, the air temperature will be in the mid-70s in July, and the water temperature will be in the low 70s. That's very appealing to them. On the other hand, if they chose to visit Miami Beach in July, both the air and the water temperatures would be considerably warmer, around 85 degrees. That sounds wonderful to them, too. Janice and Kurt also like to go camping, so vacationing in the mountains is another option. They could choose to visit the Rocky Mountains in Colorado if they wanted cooler weather. In July, the temperature in the mountains can range from a high of 80 degrees to a low of 40 degrees. If they go to the Rockies, they will certainly have to plan for this type of weather variation. It is without a doubt a tough

decision that Janice and Kurt are facing. They wish they were able to go to all of the places they have researched. If they had more money and more time, they would be able to do exactly that. In fact, they would have gone to both the beach and the mountains this year if they hadn't recently spent so much of their savings on a new big-screen TV. They wish they had realized this earlier!

Task 12. Make conditional sentences using the information given

1. In 1969, Commander Neil Armstrong was the first man to walk on the moon, so Pilot Buzz Aldrin was not. – **If Commander Neil Armstrong had not been the first man to walk on the moon in 1969, Pilot Buzz Aldrin would have been.**

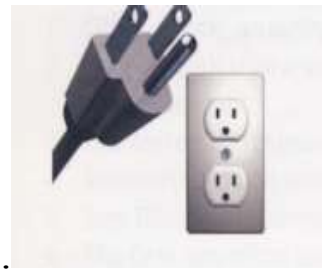
2. In 1769, Daniel Boone explored the frontier of Kentucky and was captured by the Indians there several times.
3. In 1978, Sally Ride was one of 8,000 applicants to be accepted into the astronaut training program, and in 1983 she became the first woman to orbit Earth.
4. Robert Peary valued Matthew Henson's knowledge about travel and Eskimo ways, so Peary chose Henson to accompany him on his quest to become the first man to reach the North Pole.
5. Jonas Salk discovered a cure for polio in 1952, and millions of people have been spared from this crippling disease.

Task 13. Listen electrical plug and socket formats.wma ***and match a–f to the numbers 1–6***

a. 

b. 

c. 

d.  e.  f. 

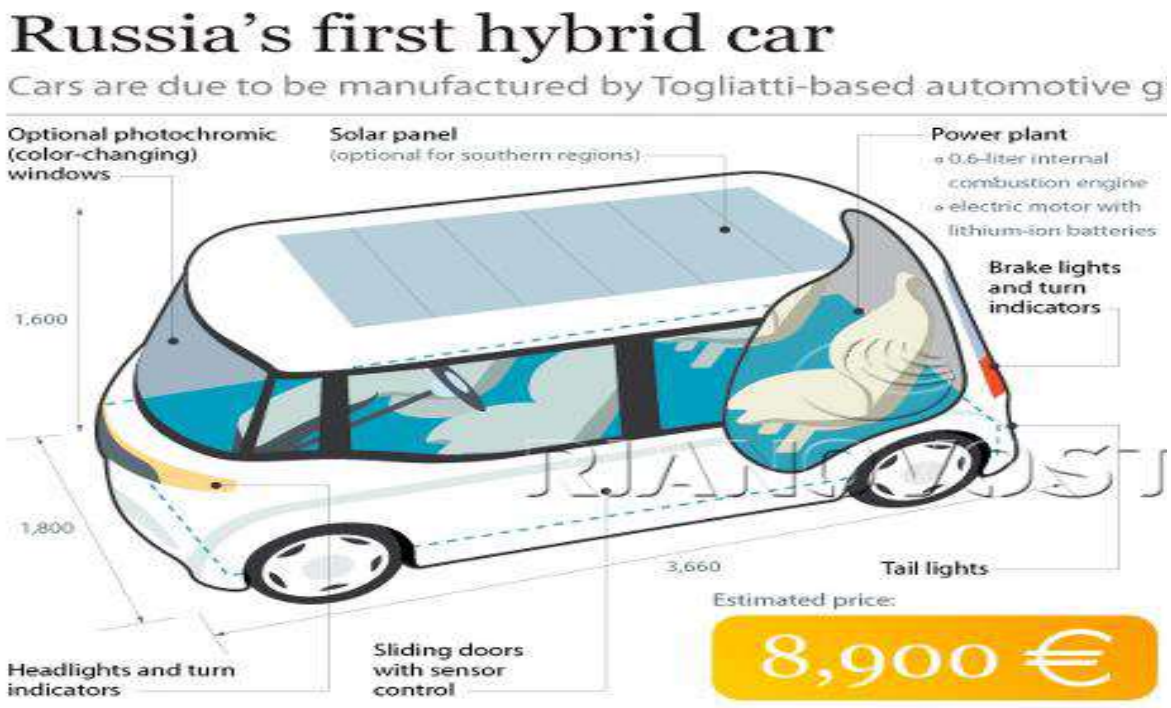
Task 14. Decide if the sentences right or wrong. Correct the wrong ones

Choosing the Right School

1. If you research your options, you will make the right choice.
2. You would need to choose an accredited school, if you thought about transferring.
3. If you had talked to an advisor, he or she could suggest possible scholarships to apply for.
4. If you had filled out your application sooner, you would heard from the Admissions Office earlier.
5. If a student was to go to a community college, he or she would save money in lower tuition costs.
6. Students often wish they had taken the SAT or ACT test earlier than they did.
7. If universities will get lots of applications, they select the best students for admission.
8. Josh had to pay out-of-state tuition during his first year of college here. Had he been a resident of the state, he could have been paid in-state tuition.

Task 16.Watch the video Real Tips for Success for Engineering Students - MIT Engineering Professor sharing Best Advice and summarise its main points

Task 17. Look at the picture of a Russia's first hybrid car. Study its features and speak about them. Would you like to have a car like this? Explain your reasons



Task 18. Read the text and answer the questions below

1. How old is the famous Coca-Cola bottle?
2. Who invented Coca-Cola? What was his job?
3. What ingredients does the drink have?
4. How was Coca-Cola sold at the beginning?
5. When was the bottle with its very distinctive shape designed?
6. When Coca-Cola appeared in Europe?
7. When was "coca" eliminated from the original drink?
8. What does modern Cola contain?

The story of Coca-Cola[17]

What is the most recognizable object in the world? Could it be a football? Or a Big-Mac? No, the answer is a Coca-Cola bottle. The famous Coca-Cola bottle is almost 100 years old! Footballs and big Macs are certainly part of life for lots of people; but Coca-Cola is now a permanent part of world culture. People know and drink Coca-Cola all over the world.

It is said that the Coca-Cola bottle is the most recognised object in the world.

[17] https://linguapress.com/intermediate/coca-cola-story.htm

Hundreds of millions of people can recognise a Coke bottle by its shape, even if they cannot see it! And the famous Coca-Cola logo is the most famous logo in the world. Unlike any other famous commercial logo, it has not changed in 100 years!

But the story of Coca-Cola is even older than that. It was in 1886 that John Pemberton, a druggist in Atlanta, Georgia, invented a new type of syrup, using coca leaves, sugar and cola nuts, plus a few other secret ingredients! Pemberton sold it as a medicine; and with its coca (the source of cocaine), it must have made people feel good.

Nevertheless, Pemberton's medicine was not very successful, so he sold his secret formula to another druggist, Asa Candler. Candler was interested, because he had another idea; he thought that Pemberton's "medicine" would be much better if it was mixed with soda.

Candler was thus the man who really invented the drink Coca-Cola. At first he sold it in his drugstore; then he began selling the syrup to other drugstores, who used it with their soda fountains. Candler also advertised his new drink, and soon people were going to drugstores just to get a drink of Coca-cola.

Before long, other people became interested in the product, including a couple of businessmen who wanted to sell it in bottles. Candler sold them a licence to bottle the drink, and very quickly the men became millionnaires. The famous bottle, with its very distinctive shape, was designed in 1916.

During the First World War, American soldiers in Europe began asking for Coca-Cola, so the Coca-cola company began to export to Europe. It was so popular with soldiers that they then had to start bottling the drink in Europe.

Today, Coca-Cola is made in countries all over the world, including Russia and China; it is the world's most popular drink.

As for the famous formula, it is probably the world's most valuable secret! The exact ingredients for making Coca-Cola are only known to a handful of people. And as for the "coca" that was in the original drink that was eliminated in 1903. It was a drug, and too dangerous. Today's Coca-Cola contains caffeine, but not in 1903. It was a

drug, and too dangerous. Today's Coca-Cola contains caffeine, but not cocaine!

Task 18.1 Match the words and their synonyms

1. shape	a. permit, authorization
2. unlike	b. bubbling water, fizzy water
3. druggist	c. memorable
4. syrup	d. a handful of
5. nuts	e. logotype, name-image
6. ingredient	f. form
7. origin	g. concentrated sweet drink
8. soda	h. pharmacist
9. advertise	i. differently to
10. licence	j. hard round fruits
11. concerning	k. element
12. formula, recipe	l. source
13. a very small number of	m. instructions for making some-thing
14. eliminate	n. publicise
15. distinctive	o. take out
16. logo	p. special as for

Task 18. 2 Using information from the article complete this résumé in your own words

Coca Cola was 1) ___ by John Pemberton, a 2) ___ living in Atlanta. The original drink was a 3) ___, and Pemberton sold it 4) ____ ____ medicine. It was really a 5) _____, being made from coca 6) ___. Pemberton 7) _____ his 8) ___ to Asa Candler, 9) ____ decided to sell it 10) ____ ____ drink, 11) ____ _____ the 14) ____ to 15) ____ drugstores. After that, he 16) ____ a 17) ____ to some businessmen, and they began to 18) ____the drink. That was the 19) ____ of the 20) ____ of Coca Cola.