ТОМСКИЙ ПОЛИТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ

TOMSK POLYTECHNIC UNIVERSITY

Выставка учебных пособий

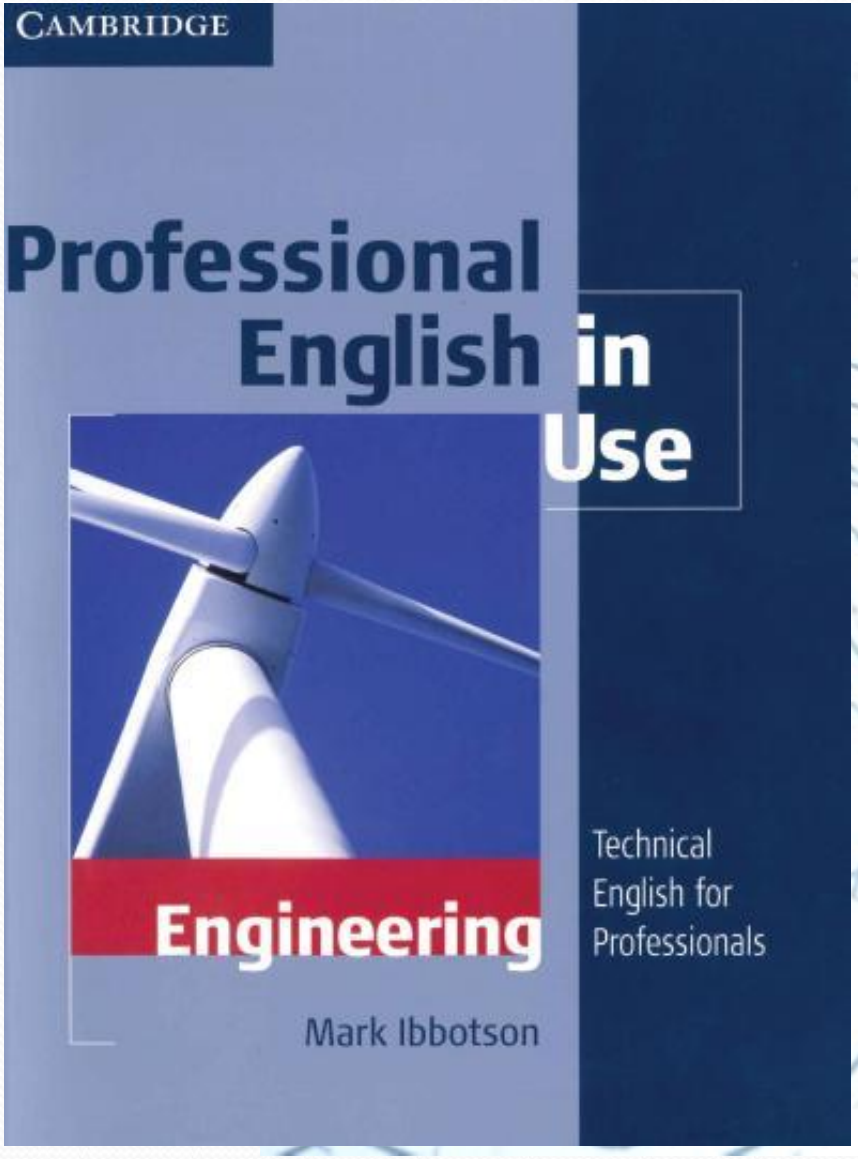
Язык научного и профессионального общения Часть I

осень 2015

Ресурсный центр языковой подготовки ИМОЯК 423 ауд.

Professional English in Use

Engineering (Technical English for Professionals)



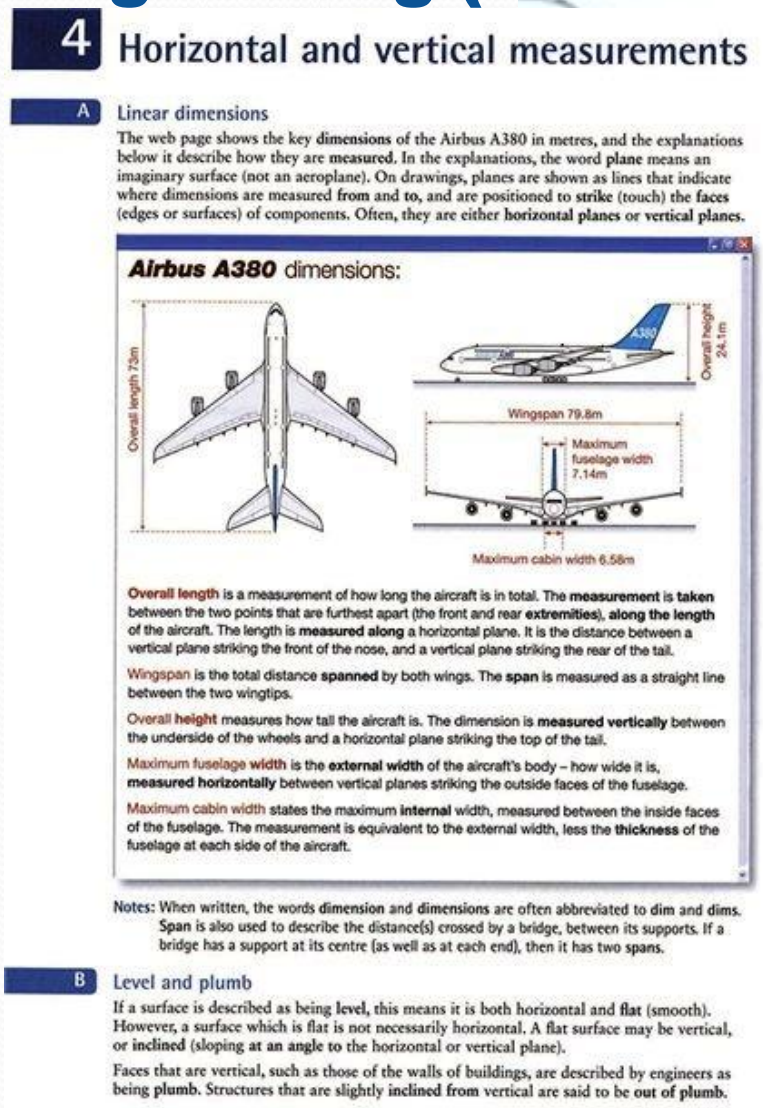
Автор: Mark Ibbotson
Издательство: Cambridge University Press
Год издания: 2009
Уровень сложности: Intermediate - Upper-Intermediate.

Учебник предназначен для инженеров, которым требуется английский в профессиональной деятельности, а также для студентов технических вузов.

Темами данного пособия являются дизайн, технология использования материалов, производство и сборка, принципы статики и динамики и другие.

В комплект также входит аудио CD

Professional English in Use
Engineering (Technical English for Professionals)



4 Horizontal and vertical measurements

A Linear dimensions

The web page shows the key **dimensions** of the Airbus A380 in metres, and the explanations below it describe how they are **measured**. In the explanations, the word **plane** means an imaginary surface (not an aeroplane). On drawings, planes are shown as lines that indicate where dimensions are measured **from** and **to**, and are positioned to **strike** (touch) the **faces** (edges or surfaces) of components. Often, they are either **horizontal planes** or **vertical planes**.

Airbus A380 dimensions:

Overall length is a measurement of how long the aircraft is in total. The **measurement** is **taken** between the two points that are furthest apart (the front and rear **extremities**), **along the length** of the aircraft. The length is **measured along** a horizontal plane. It is the distance between a vertical plane striking the front of the nose, and a vertical plane striking the rear of the tail.

Wingspan is the total distance **spanned** by both wings. The **span** is measured as a straight line between the two wingtips.

Overall **height** measures how tall the aircraft is. The dimension is **measured vertically** between the underside of the wheels and a horizontal plane striking the top of the tail.

Maximum fuselage **width** is the **external width** of the aircraft's body – how wide it is, **measured horizontally** between vertical planes striking the outside faces of the fuselage.

Maximum cabin width states the maximum **internal** width, measured between the inside faces of the fuselage. The measurement is equivalent to the external width, less the **thickness** of the fuselage at each side of the aircraft.

Notes: When written, the words **dimension** and **dimensions** are often abbreviated to **dim** and **dims**. **Span** is also used to describe the distance(s) crossed by a bridge, between its supports. If a bridge has a support at its centre (as well as at each end), then it has two **spans**.

B Level and plumb

If a surface is described as being **level**, this means it is both horizontal and **flat** (smooth). However, a surface which is flat is not necessarily horizontal. A flat surface may be vertical, or **inclined** (sloping **at an angle** to the horizontal or vertical plane).

Faces that are vertical, such as those of the walls of buildings, are described by engineers as being **plumb**. Structures that are slightly **inclined from** vertical are said to be **out of plumb**.

14 *Professional English in Use Engineering*

Ключевые особенности:

- Учебник включает 45 разделов.
- На левой странице разворота каждого раздела содержится лексический материал, на правой - упражнения для его закрепления.
- Секции "Over to you" позволяют быстро ввести слова в повседневную речь.
- Содержит подлинные тексты, реальные компании и ситуации, что представляет максимальную практическую ценность для инженеров.
- Содержит страницы с ответами.

Professional English in Use
Engineering (Technical English for Professionals)

A Screws

Screws have threaded shafts with heads. They may be screwed into a **predrilled** hole – drilled for the screw to enter. **Self-tapping screws** do not require predrilled holes. They cut their own hole as they are screwed in. Unlike bolts, screws are not used with nuts and – generally – are not screwed into threaded holes. Most **screw heads** are designed to be **screwed in** using a **screwdriver**. The most common types are **slot head screws** and **crosshead screws**.

A screwdriver

A slot head screw

A crosshead screw, Phillips type

A crosshead screw, Pozidriv type

Small-diameter bolts, which can be used with nuts or screwed into threaded holes, are sometimes called **machine screws**. Bolts that hold components in place by pressing the end of the bolt against the component, in order to generate friction and prevent sliding, are called **set screws** or **grub screws**. Examples of uses are holding a wheel on a shaft, and connecting electric wires.

B Screw anchors

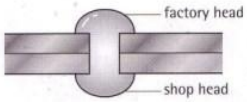
Fasteners designed to fix objects to walls are called **screw anchors**. These fit into predrilled holes. A simple screw anchor is a plastic tube called a **wall plug** (or **plug**). It is inserted in a hole, and a screw or bolt is then screwed into it. As it enters the plug, the plug **expands** (its diameter increases). This increases friction, allowing the plug to resist **pullout forces** – the forces which would cause it to be pulled out of the hole if it were not firmly **anchored**. An **expansion anchor** is another type of anchor. It consists of a bolt fitted inside a metal sleeve. The sleeve expands as the bolt is tightened in the hole.

In cases where pullout forces are very high, **chemical anchors** can be used. These are **studs** – threaded bars, onto which nuts can be screwed. The studs are **set in** – that is, held in the hole by an adhesive. Most chemical anchors are **set into** holes using a strong adhesive called epoxy resin (see Unit 29 for more on adhesives).

C Rivets

Rivets are permanent fasteners – they cannot be unscrewed. A **solid rivet** consists of a short, solid shaft of metal with a head at one end, called the **factory head**. The rivet is inserted through a pre-drilled hole, then a special tool is used to **deform** (change the shape of) the other end of the rivet, flattening and widening it to form a second head, called the **shop head**. Solid rivets are widely used in aircraft.

Blind rivets (or **pop rivets**) are made from hollow tubes, and are fitted using a tool called a **rivet gun**. Blind rivets are not suitable for high-strength joints.



A cross-section of a solid rivet

A blind rivet

Solid rivets after installation

27.1 Make word combinations with *screw* using words from A and B opposite. Then match the combinations with the descriptions (1–5) below. One description can be used twice.

1 A ..... **screw** is a thin bolt.
2 A ..... **screw** does not require a predrilled hole.
3 A ..... **screw** has a straight groove cut into the top.
4 A ..... **screw** fits screwdrivers with an X-shaped profile at the end.
5 A ..... **screw** applies pressure at its end to hold a component in place.

27.2 Complete the article from a home improvements magazine using the words in the box. Look at A and B opposite to help you.

crosshead	expand	head	plug	pullout	screw	screwdriver	set in

How **NOT** to use wall plugs ...

You check the diameter of hole required, then choose a drill bit one millimetre narrower. You've tried drilling the specified hole size many times in the past, only for it to be too big, leaving the (1) ..... spinning in the hole when you try to tighten the (2) ..... . You decide it's better to ensure a tight fit. So you drill a smaller hole than suggested, then attempt to hammer in the plug. It bends sideways, useless. You try again. And again. Eventually, you manage to get a plug into the hole. You insert the end of the screw, pick up your (3) ..... and get to work. It certainly is a tight fit. And hard work. And as the screw goes in, and the plug starts to (4) ....., the going gets harder. By the time the screw's halfway in, the screwdriver has slipped off the screw so many times that what used to be a (5) ..... pattern on the screw (6) ..... now looks more like a smooth, round hole. It's impossible to screw it in any further. Or unscrew it. So you take a pair of pliers, grip the end of the screw, and attempt to drag the whole thing out of the wall. But the (7) ..... force is beyond the power of your now-aching arms. The screw might as well be (8) ..... with epoxy resin.

27.3 Match the descriptions (1–5) to the terms (a–e). Look at C opposite to help you.

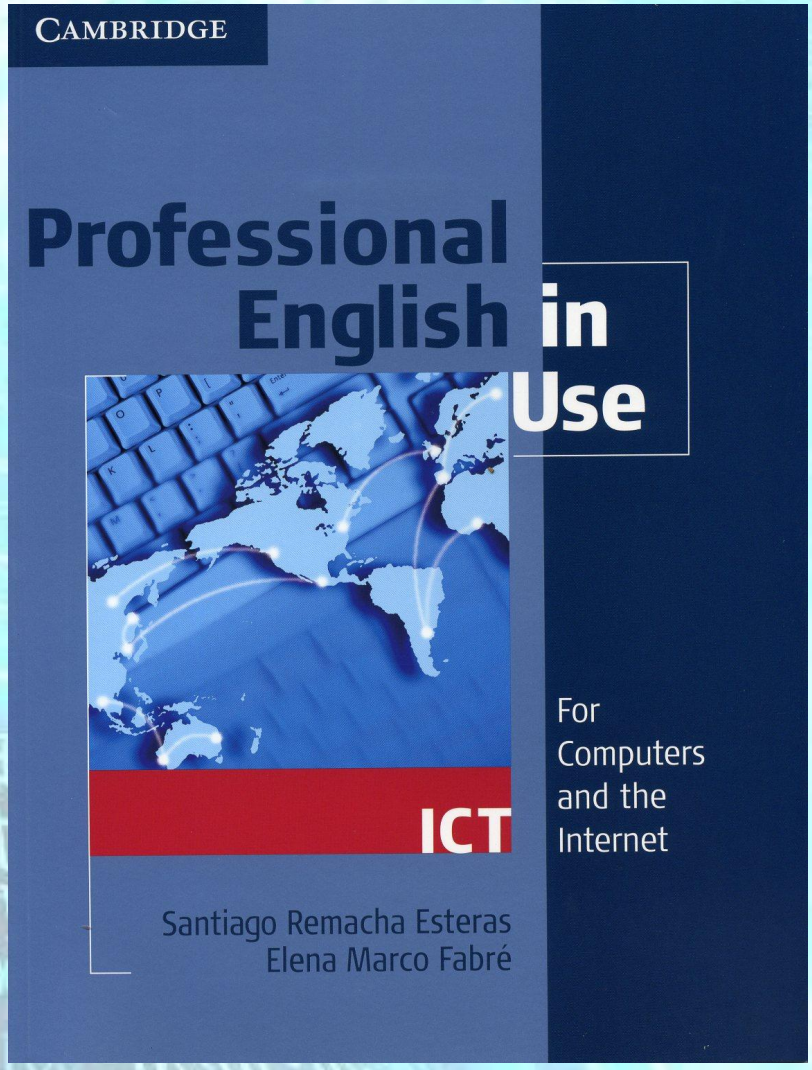
1 a type of fastener that is hollow
2 a type of fastener that is not hollow
3 a tool used for installing a type of fastener
4 the wide part at the top of a rivet, present when the rivet is supplied
5 the wide part at the bottom of a rivet, formed after the rivet is inserted

a rivet gun
b shop head
c factory head
d solid rivet
e blind rivet

Over to you

Think of an assembly or installation you know about, where screws are used as fasteners. Say what types of screw are used, and suggest why each type was specified.

Professional English in Use
ICT (For Computers and the Internet)

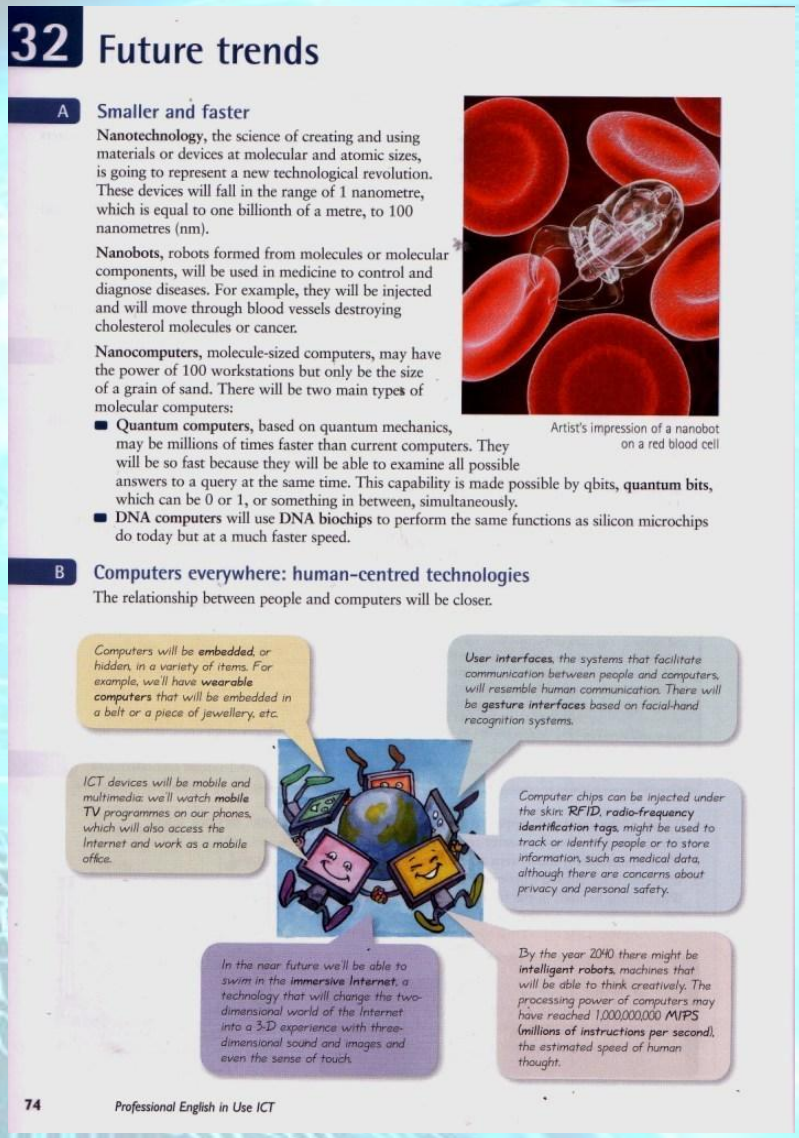


Автор: Santiago Remacha Esteras, Elena Marco Fabré
Издательство: Cambridge University Press
Год издания: 2007
Уровень сложности: Intermediate-Advanced

Учебник предназначен для тех, кому необходимо расширить словарный запас в области информационных технологий.

В учебнике представлены такие темы, как компьютерные системы, обработка текстов, таблицы и базы данных, мультимедийные приложения, электронные письма, веб-дизайн, безопасность в интернете. Есть также разделы, посвященные словообразованию и типичным языковым конструкциям, применяемым в профессиональной сфере (например, «Описание технического процесса»).
В книге объясняется использование слов в контексте и показывается, как их правильно употреблять в речи.

Professional English in Use
ICT (For Computers and the Internet)



32 Future trends

A Smaller and faster

Nanotechnology, the science of creating and using materials or devices at molecular and atomic sizes, is going to represent a new technological revolution. These devices will fall in the range of 1 nanometre, which is equal to one billionth of a metre, to 100 nanometres (nm).

Nanobots, robots formed from molecules or molecular components, will be used in medicine to control and diagnose diseases. For example, they will be injected and will move through blood vessels destroying cholesterol molecules or cancer.

Nanocomputers, molecule-sized computers, may have the power of 100 workstations but only be the size of a grain of sand. There will be two main types of molecular computers:

- **Quantum computers**, based on quantum mechanics, may be millions of times faster than current computers. They will be so fast because they will be able to examine all possible answers to a query at the same time. This capability is made possible by qbits, **quantum bits**, which can be 0 or 1, or something in between, simultaneously.
- **DNA computers** will use **DNA biochips** to perform the same functions as silicon microchips do today but at a much faster speed.

Artist's impression of a nanobot on a red blood cell

B Computers everywhere: human-centred technologies

The relationship between people and computers will be closer.

*Computers will be **embedded**, or hidden, in a variety of items. For example, we'll have **wearable computers** that will be embedded in a belt or a piece of jewellery, etc.*

*ICT devices will be mobile and multimedia: we'll watch **mobile TV** programmes on our phones, which will also access the Internet and work as a mobile office.*

*In the near future we'll be able to swim in the **immersive Internet**, a technology that will change the two-dimensional world of the Internet into a 3-D experience with three-dimensional sound and images and even the sense of touch.*

*User interfaces, the systems that facilitate communication between people and computers, will resemble human communication. There will be **gesture interfaces** based on facial-hand recognition systems.*

*Computer chips can be injected under the skin: **RFID, radio-frequency identification tags**, might be used to track or identify people or to store information, such as medical data, although there are concerns about privacy and personal safety.*

*By the year 2040 there might be **intelligent robots**, machines that will be able to think creatively. The processing power of computers may have reached 1,000,000,000 **MIPS** (**millions of instructions per second**), the estimated speed of human thought.*

74 Professional English in Use ICT

Ключевые особенности:

- Учебник включает 40 разделов.
- На левой странице разворота содержится лексический материал, на правой - упражнения для его закрепления.
- Вся лексика представлена и разъяснена в контексте.
- Секции "Over to you" позволяют быстро ввести слова в повседневную речь.
- Разработано при содействии Cambridge International Corpus, что гарантирует актуальность и современность материала.
- Содержит страницы с ответами.

Professional English in Use
ICT (For Computers and the Internet)

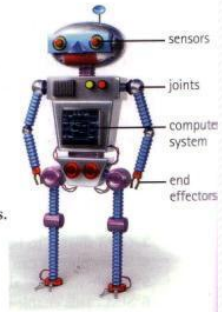
30 Robots, androids, AI

A Robots and automata

A **robot** is a computer-programmed machine that performs actions, manipulates objects, etc. in a precise and, in many cases, repetitive way.

Robots may be **automata**, or man-like machines, whose basic components are similar to a human body.

- They have mechanical links, **joints**, which connect their movable parts.
- Their heart and muscles are the electric or pneumatic motors or systems, the **actuators**, which create the movement.
- Robots also have hands, usually tools or grippers, called **end effectors**.
- They may be equipped with cameras or infrared controls, **sensors**, which transmit information to the central system in order to locate objects or adjust movements.
- Finally, robots depend on a **computer system**, the brain that directs the actions.



B Uses for robots

The word *robot* comes from *robota*, meaning compulsory labour in Czech; similarly, robots are helpful in activities which are too dangerous, too boring or too precise for human beings.

Robots in industry

Robotic arms, telescopic or bending arms, are widely used in the automobile industry to paint, weld and assemble car parts. Robots are also used in electronic assembly of microchips where precision of movements is essential.

Robots and space

Planetary rovers, remotely-operated vehicles, and **space probes**, unpiloted spaceships, are used to explore space.

Robots and health

Surgical robots, which help human surgeons, are programmed to assist in very delicate microsurgery operations or mimic the surgeons' movements in telesurgery operations.

Robots and safety

Mobile robots, vehicles controlled by human operators, are used for defusing bombs and handling hazardous materials.

Robotic arms are common in industry

C Artificial Intelligence

Artificial Intelligence (**AI**) is the science that tries to recreate the human thought process and build machines that perform tasks that normally require human intelligence. It has several applications.

Artificial Intelligence?

Androids are anthropomorphic robots designed to look and behave like a human being. Most androids can walk, talk and understand human speech. Some react to gestures and voice inflection. Some 'learn' from the environment: they store information and adapt their behaviour according to a previous experience.

Expert systems is the term given to computer software that mimics human reasoning, by using a set of rules to analyze data and reach conclusions. Some expert systems help doctors diagnose illnesses based on symptoms.

Neural networks are a new concept in computer programming, designed to replicate the human ability to handle ambiguity by learning from trial and error. They use silicon neurons to imitate the functions of brain cells and usually involve a great number of processors working at the same time.

An android and a human being: can you tell one from the other?

30.1 Complete the article with words from A opposite.

ACTION ROBOT TO COPY HUMAN BRAIN

Scientists at Aberystwyth University are working on a machine which they hope will *recognize objects with cameras that will work as* (1) ..... , and retrieve objects with an arm that will be its (2) ..... .
Although the arm will have (3) ..... that will link its muscles and an electric motor that will be the (4) ..... , this new (5)' ..... won't move like a human, i.e. it won't be like the (6) ..... of science-fiction films: forget *Star Wars'* C3PO. It will be desk based: no walking, or climbing stairs.
The team hopes to discover how the brain performs 'multi-tasking' and to use that information to develop the (7) ..... to create a robot that can think for itself.

30.2 Match the pictures below to the types of robots in B opposite.

30.3 Complete the extracts with words from C opposite.

The term (1) ..... is defined as the automation of intelligent behaviour, but can (2) ..... really be intelligent?

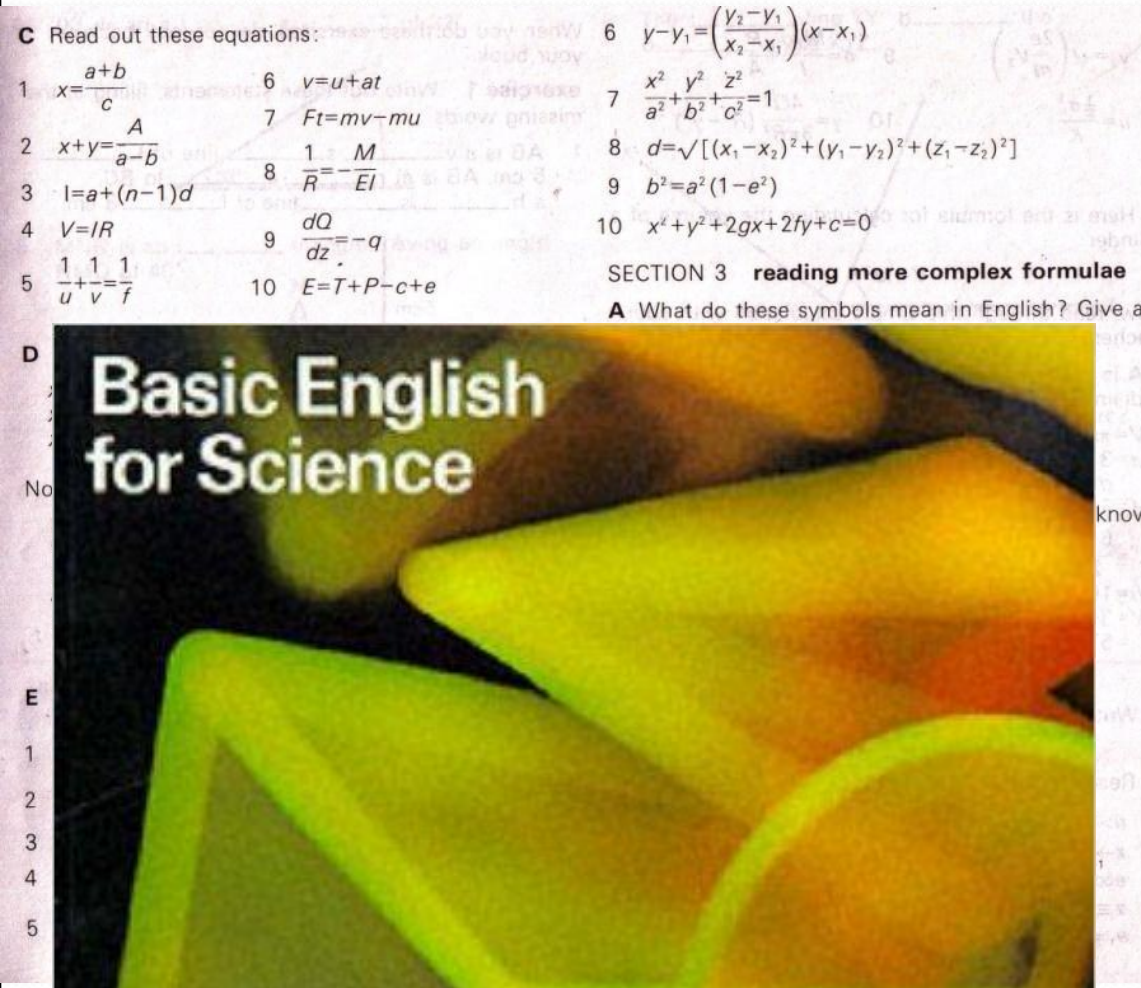
(3) ..... are made of units that resemble neurons. They are often used to simulate brain activity and are effective at predicting events.

(4) ..... , also known as knowledge-based systems, mirror the structure of an expert's thought.

You and computers

Make a list of other uses of robots at home and at work.

Basic English for Science


C Read out these equations:

1 $x=\frac{a+b}{c}$

2 $x+y=\frac{A}{a-b}$

3 $l=a+(n-1)d$

4 $V=IR$

5 $\frac{1}{u}+\frac{1}{v}=\frac{1}{f}$

6 $v=u+at$

7 $Ft=mv-mu$

8 $\frac{1}{R}=-\frac{M}{EI}$

9 $\frac{dQ}{dz}=-q$

10 $E=T+P-c+e$

6 $y-y_1=\left(\frac{y_2-y_1}{x_2-x_1}\right)(x-x_1)$

7 $\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=1$

8 $d=\sqrt{[(x_1-x_2)^2+(y_1-y_2)^2+(z_1-z_2)^2]}$

9 $b^2=a^2(1-e^2)$

10 $x^2+y^2+2gx+2fy+c=0$

SECTION 3 **reading more complex formulae**

A What do these symbols mean in English? Give an

D

No

know

E

1

2

3

4

5

Автор: Peter Donovan
Издательство: Oxford University Press
Год издания: 1978
Уровень сложности: Beginner – Intermediate

Данный курс направлен на развитие у учащихся способностей работать с научными концепциями и эффективно использовать их в дискуссиях и письменных работах. Учащиеся узнают, как составлять описание, строить гипотезы, предположения, писать отчеты, суммировать результаты, необходимые для проведения научных исследований любого рода.

В комплект также входят: книга для учителя и набор из шести аудиокассет.

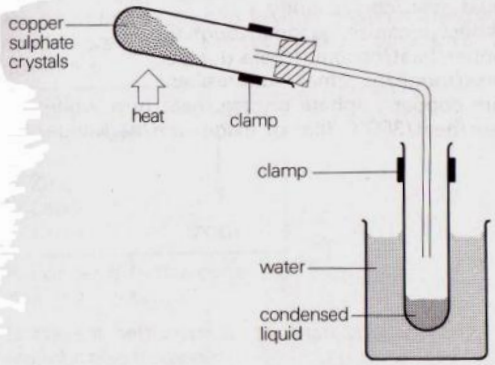
Basic English for Science

steel. The oxide first turns a very pale yellow, and changes through a range of colours to dark blue as it is h_____.

Ask and answer questions about this table, which shows the colour of the film of oxide at different temperatures:

Temp. °C	Colour
220	pale yellow
230	straw
240	dark straw
250	light brown
260	purple/brown
270	purple
290	bright blue
300	dark blue

E Study this diagram and the following passage carefully, and then answer the questions.



Experiment to show the presence of water of crystallization in a salt

Dry crystals of copper sulphate in the test-tube are heated. The colour of the crystals before heating is dark blue. When they are heated, the dark blue colour fades and the crystals turn white. At the same time, a colourless liquid is collected in the water-cooled tube. If the boiling-point and freezing-point of this liquid are measured, they are found to be the same as for water.

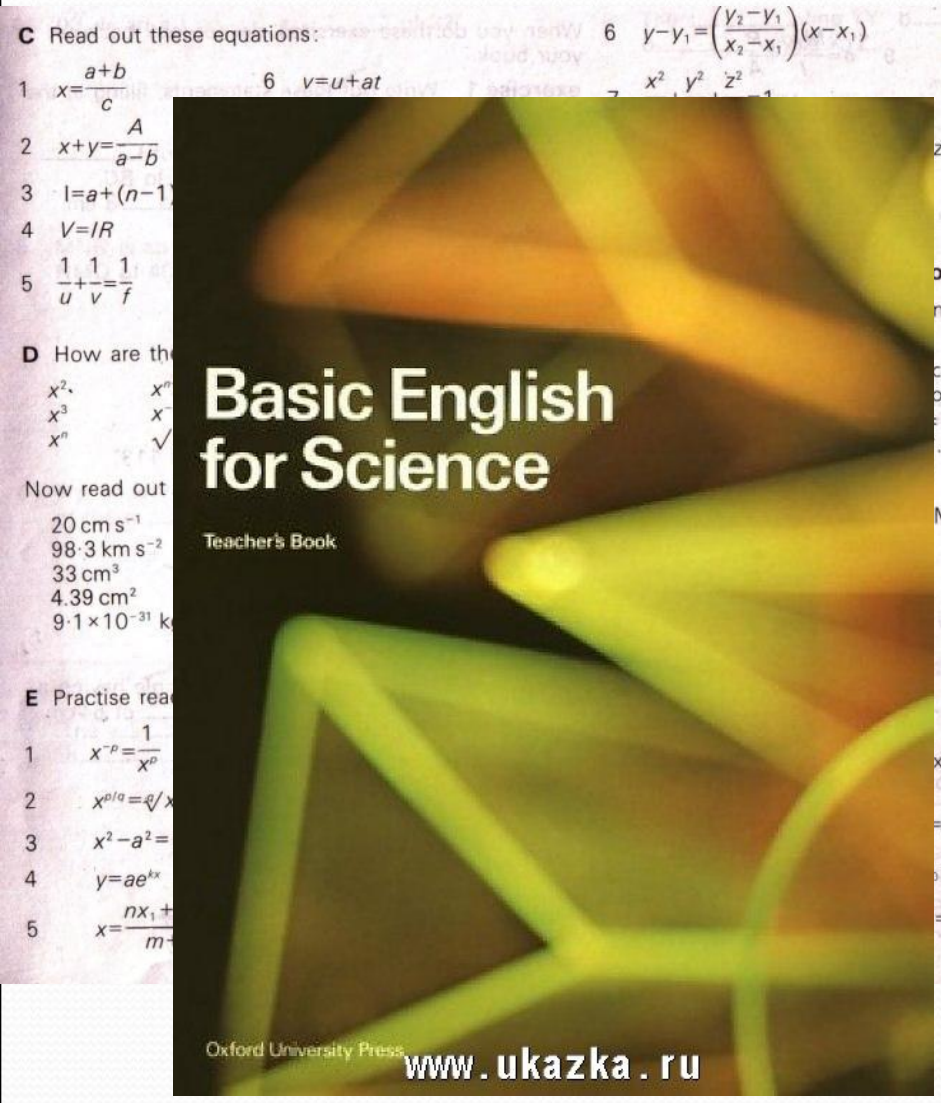
If water is added to the cold dry white copper sulphate crystals, they turn blue and much heat is produced. This shows that blue copper sulphate crystals contain water, which is removed when the crystals are heated.

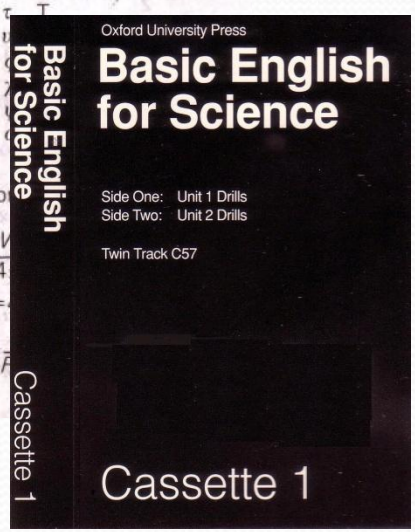
1 Describe the apparatus used in this experiment.
2 What is the colour of the crystals before heating?
3 What happens when they are heated?
4 What tests are carried out with the liquid which is collected?
5 What do the tests show?
6 What can be done to the cold dry white copper sulphate crystals?
7 What happens when this is done?
8 Write down a series of steps for carrying out the experiment. For instance:
(i) Dry crystals of blue copper sulphate are placed in the test-tube.

Ключевые особенности:

- Книга состоит из 11 уроков, в которых соблюдается переход простых заданий к более сложным.
- Каждый урок содержит 3 раздела с описаниями и объяснениями процессов , инструкциями, описаниями экспериментов.
- Каждый урок включает задания и упражнения на отработку изученного материала.
- В конце каждого урока предлагается творческое задание .

Basic English for Science
Teacher's Book + audiocassettes

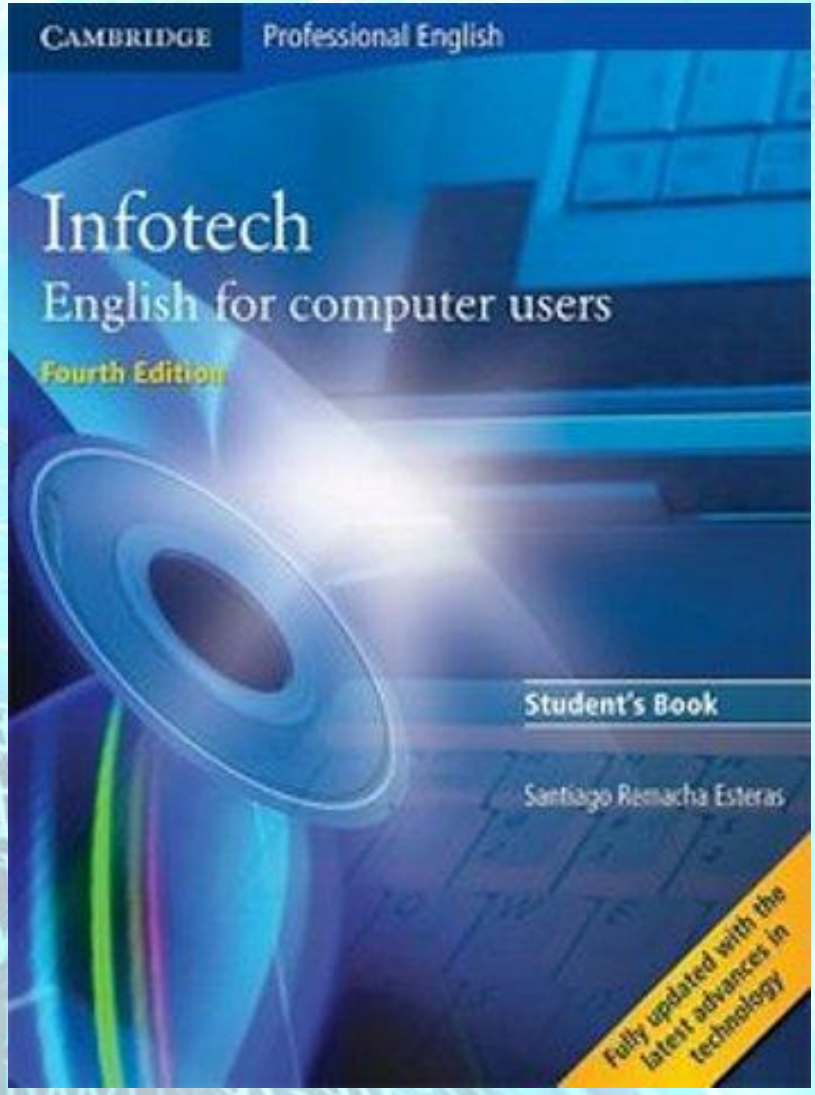




Книга для учителя содержит:

- Подробную методику преподавания к каждому уроку.
- Ответы к упражнениям.
- Разъяснения к творческим заданиям.

Infotech
English for Computer Users (fourth edition)



Автор: Santiago Remacha Esteras
Издательство: Cambridge University Pre
Год издания: 2011
Уровень сложности: Upper-Intermedia

Этот учебник предназначен не только д
тех, кто изучает информатику и
инженерные дисциплины или является
специалистом в этих областях, но и для
всех остальных, не обладающих
специальными знаниями в области
информационных технологий вообще и
компьютеров в частности.

4-е издание учебника полностью
согласованно с последними
достижениями в области
информационных технологий,
и призвано обучать языковым навыкам,
необходимым для полного понимания
работы в компьютерном мире.

В комплект также входят: книга для учителя и аудио CD

Infotech
English for Computer Users

3 ***Choosing the right display device***

A **Listen to five customers in a computer shop describing their display device needs. Which device (a–e) would you recommend to each person? In pairs, discuss your choices and give reasons for them.**

Speaker 1 _____ Speaker 4 _____

Speaker 2 _____ Speaker 5 _____

Speaker 3 _____

NEC MultiSyn LCD Monitor

Screen size: 17"

Resolution: 1280x1024 (SXGA)

Aspect ratio: 5:4

Brightness: 400 cd/m²

a

Dell UltraSharp LCD monitor

Widescreen 24" flat panel

Resolution: 1920x1200

Colour support: 16.7 million

Multiple video inputs, flash-card slots and USB ports

b

Cambridge-Hitachi interactive whiteboard

Allows interaction with a projected computer image

Board size: 78"

Connected to the PC via USB

Pointing device: cordless pen

c

Pioneer 50" Plasma TV

Resolution: 1280x768 (XGA)

Blu-ray Disc recorder

5.1 surround sound system (Five audio channels plus one subwoofer)

d

Portable projector

DLP (Digital Light Processing) technology

Resolution: 1024x768

Projection screen

e

B **In pairs, discuss which of the display devices you would most like to own. Give reasons for your choice.**

Ключевые особенности:

- Учебник состоит из 30 разделов.
- Каждый раздел включает технические тексты, аудирование и упражнения на отработку.
- Изучается тот вариант английского языка, которым пользуются при профессиональном и непрофессиональном общении во всех основных областях информационных технологий и компьютерной техники, а также при беседах на общетехнические темы.
- Содержит глоссарий.

Infotech
English for Computer Users

Unit 10

Magnetic storage

1 Types of magnetic drive

A Look at the pictures and descriptions below and find the following.

1 the name of the hard drive on a PC platform
2 the type of hard drive that plugs into a socket at the back of a computer
3 the system that works in sequential format
4 the size and storage capacity of a floppy disk

A 3.5" floppy drive and diskette
A floppy disk drive uses 3.5" disks, which can store 1.44MB of data; it is usually assigned to the A: drive. Floppy drives are becoming increasingly rare.

The inside of a hard drive
Most PCs have one internal hard drive, usually called C: drive. It is used to store the operating system, the programs and the user's files in a convenient way. A hard drive can hold hundreds of gigabytes of data.

A portable external hard drive
External hard drives are connected to the USB or FireWire port of the computer. They can be as small as a wallet but can have as much capacity as internal drives; they are typically used for backup or as secondary storage.

Magnetic tapes and drive
A tape drive reads and writes data on tapes. It is sequential-access – i.e. to get to a particular point on the tape, it must go through all the preceding points. Tapes can hold hundreds of gigabytes of data and are used for data collection, backup and archiving.

B Complete these sentences with words from the box.

capacity	storage	archiving	hold	secondary

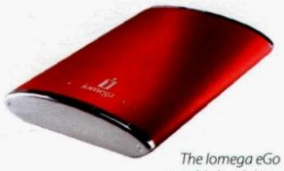
1 There are basically three types of magnetic _____ device available to the computer user – hard drives, diskettes and tapes.
2 The _____ of a 3.5" floppy disk is only 1.44MB.
3 Hard drives can _____ hundreds of times more data than floppy disks.
4 A portable hard drive is a good choice for _____ storage.
5 Magnetic tapes are used for _____ information that you no longer need to use regularly.

2 Buying a portable hard drive

A Sue (see Unit 4) wants to buy a new drive. Listen to her conversation with the sales assistant. Does she buy anything?

B Listen again and answer these questions.

1 What is the storage capacity of the Iomega eGo portable hard drive?
2 How much information can be stored on the Edge DiskGo model?
3 Which hard drive is good for mobile professionals?
4 How much does the Iomega eGo drive cost?
5 How much does the Edge DiskGo cost?



The Iomega eGo portable hard drive.

3 Magnetic storage

A Read the text and then identify a sector and a track in Fig. 1.

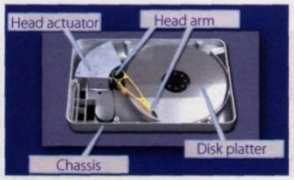
B Read the text again and decide whether these sentences are true or false. Correct the false ones.

1 A hard drive spins at the same speed as a floppy disk drive.
2 If you format a hard drive that has files on it, the files will be deleted.
3 Hard drives cannot be partitioned to run separate operating systems on the same disk.
4 *Seek time* and *transfer rate* mean the same thing.
5 Disk drives are not shock resistant, especially in operating mode.

Magnetic storage

Magnetic storage devices store data by magnetizing **particles** on a disk or tape.

A **floppy disk** is so called because it consists of a flexible sheet of plastic, coated with iron oxide – a magnetizable material. A floppy disk drive spins at 360 revolutions per minute (rpm), so it's relatively slow. However, a **hard drive** spins at over 7,200 rpm and stores data on a stack of metal rotating disks called **platters**. This means you can store much more data and retrieve information much faster.



The inside of a hard drive

New disks need to be **formatted** before you can use them, unless they come preformatted from the manufacturer. When the disk is formatted, the operating system (OS) organizes the disk surface into circular **tracks** and divides each track into **sectors**. The OS creates a **directory** which will record the specific location of files. When you save a file, the OS moves the **read/write head** of the drive towards empty sectors, records the data and writes an entry for the directory. Later on, when you open that file, the OS looks for its entry in the directory, moves the read/write heads to the correct sector, and reads the file in the RAM area. However, formatting erases any existing files on a disk, so do not format disks on which data that you don't want to lose is stored.

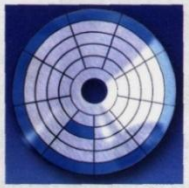


Fig. 1

The OS allows you to create one or more **partitions** on your hard drive, in effect dividing it into several logical parts. Partitions let you install more than one operating system (e.g. Windows and Linux) on your computer. You may also decide to split your hard drive because you want to store the OS and programs on one partition and your data files on another; this allows you to reinstall the OS when a problem occurs, without affecting the data partition.

Toshiba's 1.8" hard drive; mini hard drives are used in small gadgets, such as PDAs and wristwatches

The average time required for the read/write heads to move and find data is called **seek time** (or **access time**) and it is measured in milliseconds (ms); most hard drives have a seek time of 7 to 14 ms. Don't confuse this with **transfer rate** – the average speed required to transmit data from the disk to the CPU, measured in megabytes per second.

How to protect your hard drive

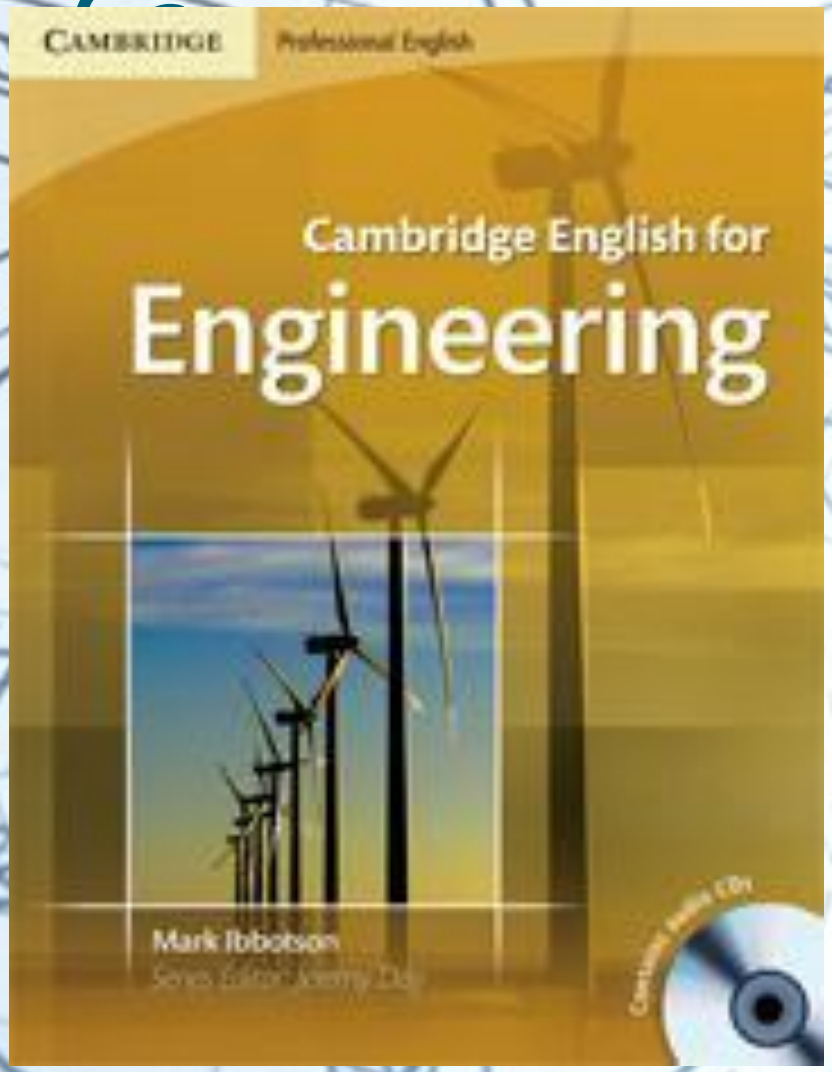
- Don't hit or move the computer while the hard drive is spinning. Hard drives are very sensitive to vibration and shocks, especially when they are operating; when the read/write head touches the rotating disk, it can scratch and damage the disk surface. This is known as **head crash**.
- You shouldn't turn your computer off and on quickly. Wait at least ten seconds to ensure that the drive has stopped spinning.
- Check your hard drive regularly for logical and physical errors. To check and repair a drive, you can use a disk diagnosis utility like Windows ScanDisk.
- To minimize the risk of data loss or corruption, you should install an up-to-date virus scanner. You should also **back up** your hard drive regularly.

Infotech
English for Computer Users (fourth edition)
Teacher's Book + CD

Книга для учителя содержит:

- Поурочное планирование.
- Дополнительную техническую информацию.
- Задания на распечатывание.
- Ключи к упражнениям и заданиям.
- Скрипты к аудиоупражнениям.
- Тесты.

Cambridge English for Engineering



Автор: Mark Ibbotson
Издательство: Cambridge University Press
Год издания: 2010
Уровень сложности: Intermediate – Advanced

Учебник предназначен для инженеров-строителей, инженеров-механиков и инженеров-электриков.

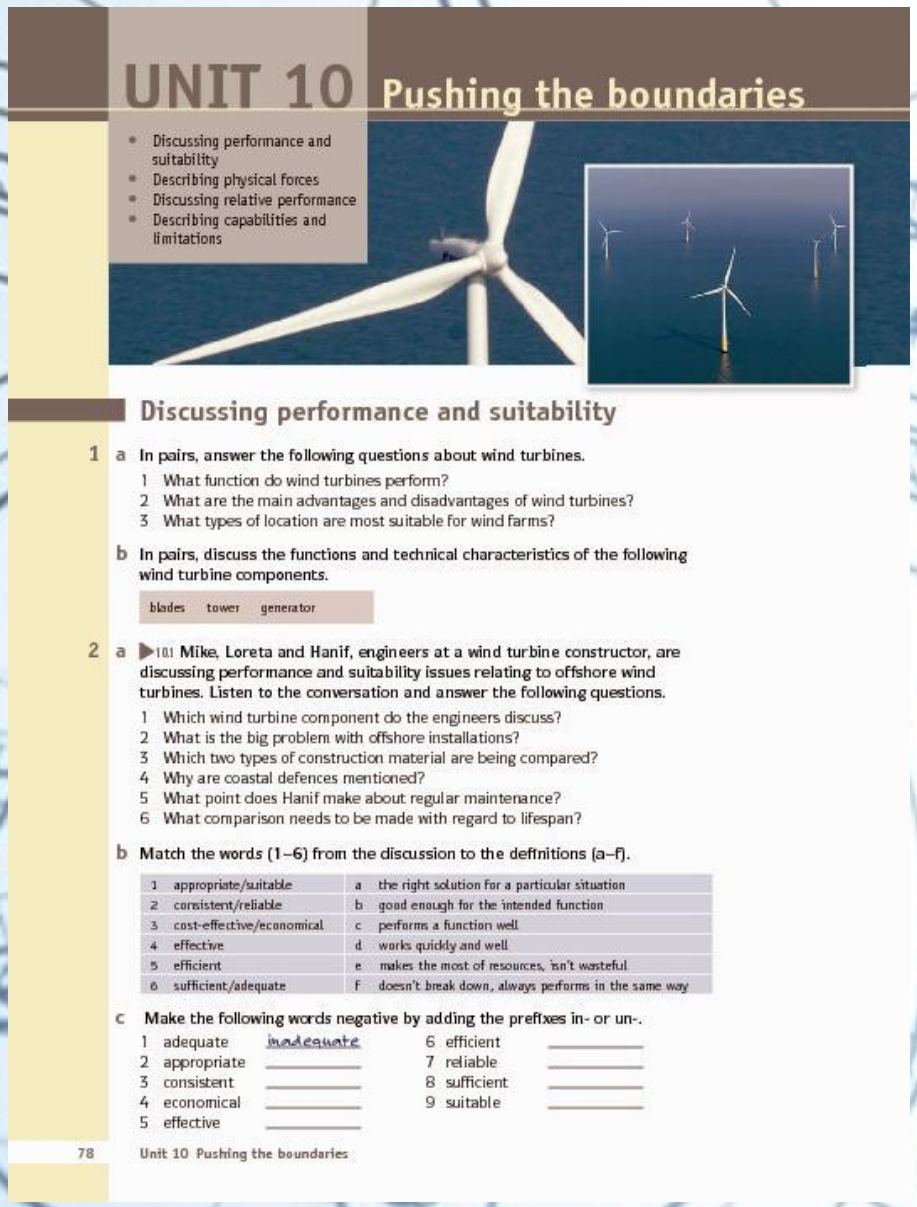
Основные направления учебника:

- принципы работы, функции, технологические термины;
- материалы, их категории, описания, свойства;
- производство по технологиям;
- инженерные чертежи: создание, обозначения, составляющие;
- решение технических проблем, ремонт, обслуживание.

Ведется отработка навыков говорения, работы с текстом, в том числе с аутентичными узкопрофильными материалами.

В комплект также входит аудио CD

Cambridge English for Engineering



UNIT 10 Pushing the boundaries

- Discussing performance and suitability
- Describing physical forces
- Discussing relative performance
- Describing capabilities and limitations

Discussing performance and suitability

1 a In pairs, answer the following questions about wind turbines.

1 What function do wind turbines perform?
2 What are the main advantages and disadvantages of wind turbines?
3 What types of location are most suitable for wind farms?

b In pairs, discuss the functions and technical characteristics of the following wind turbine components.

blades tower generator

2 a ▶1.01 Mike, Loreta and Hanif, engineers at a wind turbine constructor, are discussing performance and suitability issues relating to offshore wind turbines. Listen to the conversation and answer the following questions.

1 Which wind turbine component do the engineers discuss?
2 What is the big problem with offshore installations?
3 Which two types of construction material are being compared?
4 Why are coastal defences mentioned?
5 What point does Hanif make about regular maintenance?
6 What comparison needs to be made with regard to lifespan?

b Match the words (1–6) from the discussion to the definitions (a–f).

1	appropriate/suitable	a	the right solution for a particular situation
2	consistent/reliable	b	good enough for the intended function
3	cost-effective/economical	c	performs a function well
4	effective	d	works quickly and well
5	efficient	e	makes the most of resources, isn't wasteful
6	sufficient/adequate	f	doesn't break down, always performs in the same way

c Make the following words negative by adding the prefixes in- or un-.

1 adequate inadequate
2 appropriate _____
3 consistent _____
4 economical _____
5 effective _____
6 efficient _____
7 reliable _____
8 sufficient _____
9 suitable _____

78 Unit 10 Pushing the boundaries

Ключевые особенности:

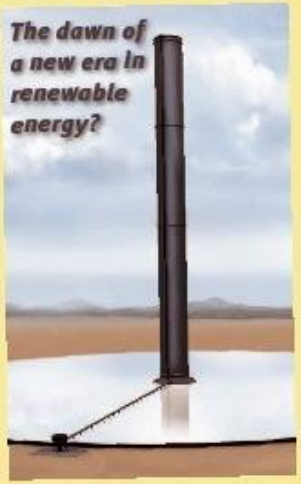
- Учебник состоит из 10 разделов.
- Для каждого раздела учебника указан отрабатываемый в нём набор навыков согласно цели высказываний (например, описание автоматизированных систем или объяснение испытаний и экспериментов).
- В курсе представлено много заданий и упражнений, с помощью которых отрабатываются различные аспекты английского языка.
- В конце учебника приведены ключи к упражнениям и заданиям.
- Включены скрипты к аудиоупражнениям
- Содержит глоссарий.

Cambridge English for Engineering

Describing physical forces

4 a Read the following article. What is a solar tower and how does it use the forces of expansion and pressure?

SOLAR TOWERS



The need to develop renewable energy is widely seen as a futuristic technological challenge. In reality, some of the most effective ways of harnessing horsepower from nature are based on concepts that have existed for donkey's years. The wind turbine is an obvious example. Another – less well known, but conceived almost a century ago – is the solar tower or solar chimney. And if the Australian company EnviroMission completes an ambitious solar tower project in the New South Wales desert, the technology could capture not just the sun's rays but the public's imagination worldwide. The firm is planning to construct a tower a colossal one kilometre high. If built, it will be the world's tallest structure by a huge margin.

How it works

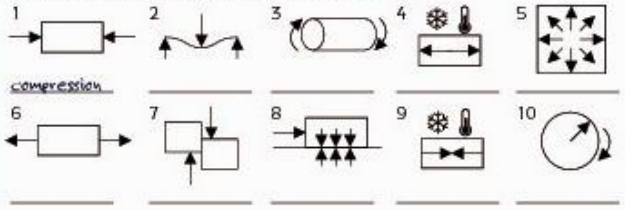
A large glass enclosure is built, with a chimney at its centre. The sun heats the enclosure, causing expansion of the air inside. At the top of the chimney, the lower temperature and lower pressure due to the higher altitude create a pressure differential known as stack effect. This causes air to flow up the chimney. Electricity is generated by turbines at the bottom of the chimney, which are driven by the flow of air. The bigger the area of glass and the taller the chimney, the greater the airflow and the higher the generating capacity.

b What physical forces would act on a solar tower 1 km high?

c ▶102 Su, a structural engineer specialising in the design of very tall structures, is giving a talk to a group of engineering students. Listen to the talk. Which of the forces in the box doesn't she mention?

bending centrifugal force compression contraction expansion friction pressure shear tension torsion/torque

d Label the diagrams using the forces in Exercise 4c.

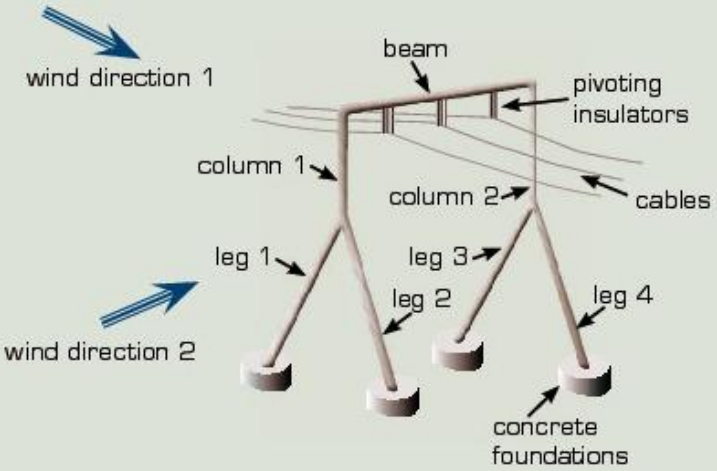


e ▶102 Complete the following sentences from the talk using the forces in Exercise 4c. Listen again and check your answers.

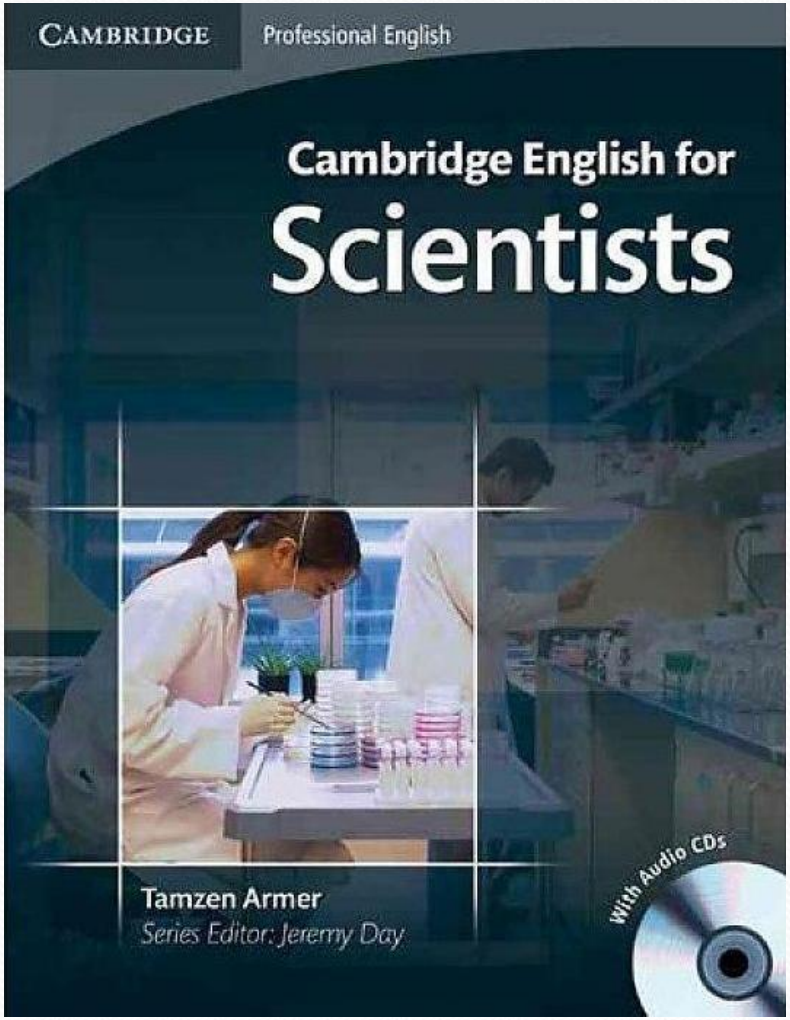
1 *So that downward force means the structure is in* compression *, especially near the bottom.*
2 *... a horizontal load, exerted by air* _____ *against one side of the structure.*
3 *Because the structure is fixed at ground level, and free at the top, that generates* _____ *forces.*
4 *... when elements bend, you have opposing forces:* _____ *at one side,* _____ *at the other.*
5 *... the wind effectively tries to slide the structure along the ground, and the foundations below the ground resist that. The result of that is* _____ *force ...*
6 *... the foundations need to rely on* _____ *with the ground to resist the pull-out force, ...*
7 *The action of the wind can also generate* _____ *. You get a twisting force ...*
8 *When concrete absorbs heat from the sun, you get* _____ *; as soon as the sun goes in, there's* _____ *.*

f You and your partner specialise in designing structures for electrical transmission grids. You are currently working on a cable support concept for power lines near wind farms exposed to severe weather. You have come up with the following design. In pairs, hold a short meeting to evaluate your design concept. Explain the forces acting on the structure.

Severe weather cable support concept



Cambridge English for Scientists



Автор: Tamzen Armer
Издательство: Cambridge University Press
Год издания: 2012
Уровень сложности: Intermediate – Advanced

Учебник предназначается для ученых с широким спектром научного багажа и не требует никаких специальных знаний относительно преподавателя. Совершенствование знаний происходит в процессе разбора материалов, касающихся научных исследований, то есть их проведения, подготовки необходимых материалов, составления отчетности и другое, что позволяет учащимся отработать навыки использования приобретенных знаний на практике.

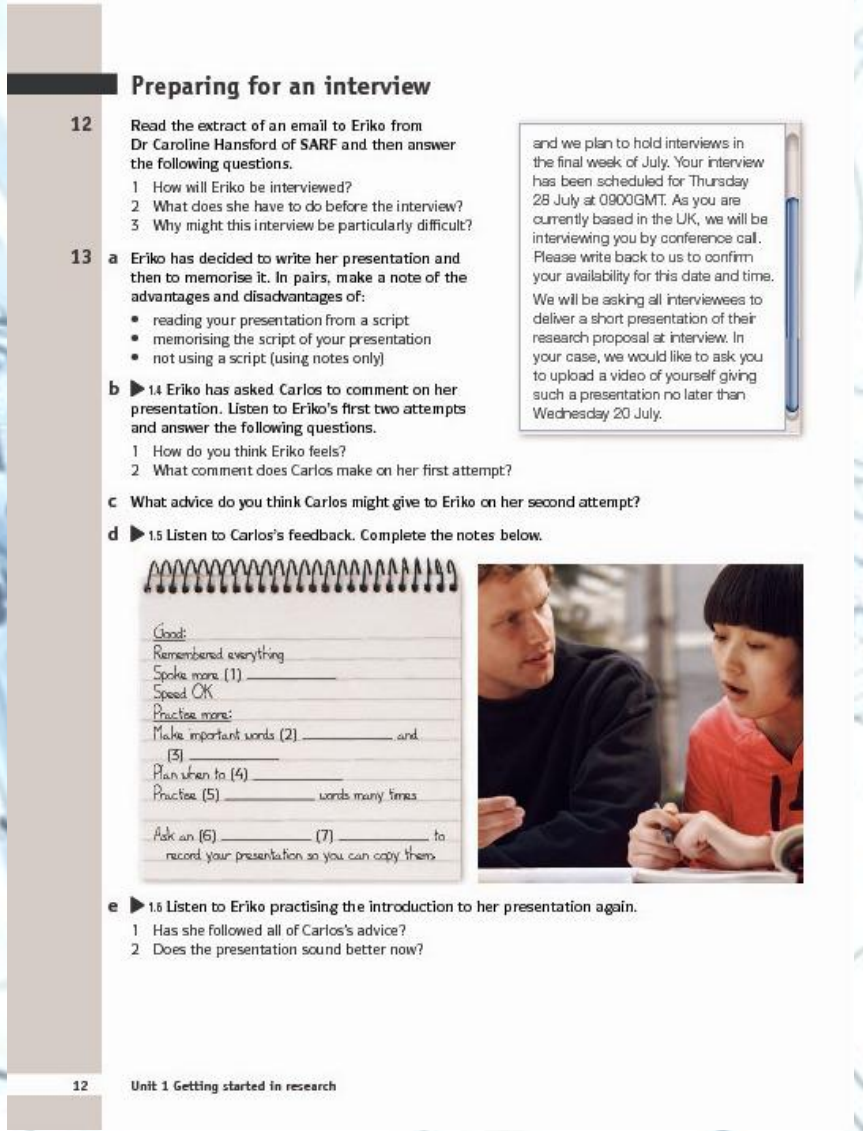
Материал учебника представлен модулями:

- подготовка к карьере ученого, написание резюме, прохождение собеседования; взаимодействие с научным сообществом, критика;
- подготовка литературного эссе, участие в научных конференциях;
- подготовка и проведение опытов, формулировка выводов;
- ведение научного журнала, работа с прочей документацией.

Предлагается научиться вести профильные тематические диалоги, писать доклады и статьи, в том числе уметь выступать с ними перед публикой.

В комплект также входит аудио CD

Cambridge English for Scientists



Preparing for an interview

12 Read the extract of an email to Eriko from Dr Caroline Hansford of SARF and then answer the following questions.

1 How will Eriko be interviewed?
2 What does she have to do before the interview?
3 Why might this interview be particularly difficult?

and we plan to hold interviews in the final week of July. Your interview has been scheduled for Thursday 28 July at 0900GMT. As you are currently based in the UK, we will be interviewing you by conference call. Please write back to us to confirm your availability for this date and time.

We will be asking all interviewees to deliver a short presentation of their research proposal at interview. In your case, we would like to ask you to upload a video of yourself giving such a presentation no later than Wednesday 20 July.

13 **a** Eriko has decided to write her presentation and then to memorise it. In pairs, make a note of the advantages and disadvantages of:

- reading your presentation from a script
- memorising the script of your presentation
- not using a script (using notes only)

b ▶ 1.4 Eriko has asked Carlos to comment on her presentation. Listen to Eriko's first two attempts and answer the following questions.

1 How do you think Eriko feels?
2 What comment does Carlos make on her first attempt?

c What advice do you think Carlos might give to Eriko on her second attempt?

d ▶ 1.5 Listen to Carlos's feedback. Complete the notes below.

Good:
Remembered everything
Spoke more (1) _____
Speed OK
Practise more:
Make important words (2) _____ and (3) _____
Plan when to (4) _____
Practise (5) _____ words many times
Ask an (6) _____ (7) _____ to record your presentation so you can copy them

e ▶ 1.6 Listen to Eriko practising the introduction to her presentation again.

1 Has she followed all of Carlos's advice?
2 Does the presentation sound better now?

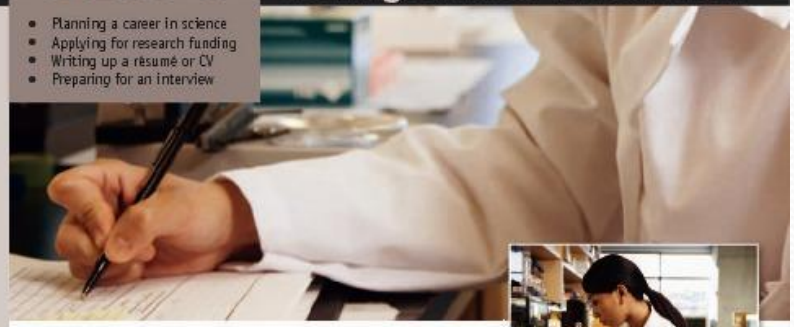
Ключевые особенности:

- Учебник состоит из 10 разделов.
- Для каждого раздела учебника указан отрабатываемый в нём набор навыков согласно цели высказываний (например, представление доклада на конференции или написание рецензии).
- В курсе представлено много заданий и упражнений, с помощью которых отрабатываются различные аспекты английского языка.
- В конце учебника приведены ключи к упражнениям и заданиям.
- Включены скрипты к аудиоупражнениям.
- Содержит глоссарий.

Cambridge English for Scientists

UNIT 1 Getting started in research

- Planning a career in science
- Applying for research funding
- Writing up a résumé or CV
- Preparing for an interview



Planning a career in science

1 a In pairs, discuss the following questions.

1 Why did you choose a career in science?
2 What field of science are you currently working or studying in?
3 What would you like to do next in your work or studies?

b Many scientists continue their education in other countries. The table below summarises higher education for science in the US. Make a similar table for your country and then answer the following questions.

1 Is science education in the US similar to science education in your country?
2 If you decided to study in the US, which qualification would be best for you?

Higher education for science in the US

Qualification (lowest to highest)	Category	Duration (full-time)	Place of study
Associate of Science degree (AS)	undergraduate	2 years	community college or junior college
Bachelor of Science degree (BS)	undergraduate	2 or 4 years*	college or university
Master of Science degree (MS)	graduate (postgraduate)	2 years	university or graduate school
Doctoral degree (PhD)	graduate (postgraduate)	3 to 8 years	university or graduate school

* Students who have already completed an Associate (AS) degree can become a Bachelor of Science if they study for two more years.

2 a ▶ 1.1 Eriko is from Japan and will soon complete a PhD in biotechnology in London. She is discussing the next stage in her career with her supervisor, Susana. Listen to part of their conversation and tick the options which interest her and put a cross next to the options which do not.

- ☐ teaching (undergraduate) students
- ☐ doing post-doctoral research
- ☐ supervising a research team
- ☐ finding a permanent position at a university
- ☐ discussing theory
- ☐ doing practical fieldwork
- ☐ staying in London
- ☐ finding a well-paid job

b ▶ 1.2 You will hear eight sentences from Eriko and Susana's conversation. Listen and complete the first row of the table by writing the number of each sentence (1–8) in the correct column.

Talking about ...			
likes or dislikes	past experiences	future (more certain)	future (possible)

c Look at the underlined phrases in Audioscript 1.2 on page 91. Put the underlined phrases into the correct part of the second row of the table in Exercise 2b.

3 a Think about your career in science and make notes on:

- what you enjoy most about working in your scientific field
- what you would like to do (and not like to do) next in your career
- which of your past and present experiences are most relevant to your future in science

b In pairs, take turns to interview your partner about his/her career path in science. Use the phrases from Exercise 2c to help you.

Oxford English for Careers
Technology 1

Автор: Eric H. Glendinning
Издательство: Oxford University Press
Год издания: 2007
Уровень сложности: Pre-Intermediate

Учебник предназначен для развития навыков общения на английском в отраслях, связанных с высокими технологиями. Он позволит Вам представлять свои идеи, решать проблемы и обсуждать последние технические достижения.

Учебник включает лексический набор, обзорную информацию, освящают все навыки, которыми должен обладать человек определенной профессии

В комплект также входят: книга для учителя и аудио CD

Oxford English for Careers Technology 1

9 High living: skyscrapers

Switch on

1 Name some famous skyscrapers. Which cities are they in?

2 Look at the diagram. It shows some of the components of a skyscraper. Match a–f below with 1–6 in the diagram.

a concrete base
b cladding
c floors below ground
d steel columns
e horizontal I-shaped girders
f steel piles

Ключевые особенности:

- Учебник состоит из 15 разделов.
- Информация "из первых рук": авторы учебника - профессионалы в своей области.
- Новая лексика изучается в контексте: студентам предлагается "проиграть" новый материал в реальных рабочих ситуациях (на примере аутентичных текстов).
- Каждый раздел включает специализированную лексику, общую грамматику и практические навыки в определенной области.
- «Это моя будущая профессия» - аутентичные тексты, в которых люди рассказывают о своей будущей профессии.
- Дополнительные интерактивные упражнения для практики языка и повторения пройденного материала.
- Включены скрипты к аудиоупражнениям.
- Содержит глоссарий.

Oxford English for Careers
Technology 1

1 Technology and society

In this unit
- speaking about the way technology affects our lives
- listening to people describing the effects of new technology on their work
- comparisons with adjectives and adverbs
- how to stress technical words
- how to group and remember new terms

Switch on

1 Look at pictures A–F. They show ways in which technology affects how we live. Identify the different items in each picture.

2 Match the effects of technology to pictures A–F. Decide which effects are positive, and which are negative.

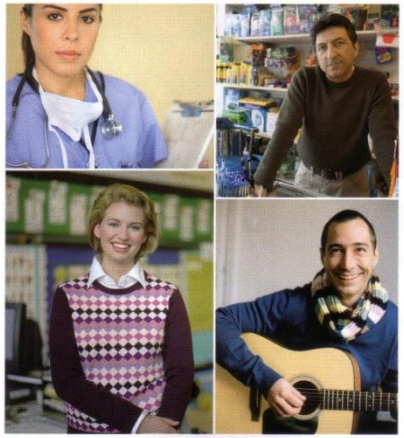
1 fast travel	7 road deaths
2 river pollution	8 space exploration
3 nuclear missiles	9 overweight people
4 less housework	10 global warming
5 cheap power	11 easy communication
6 noise pollution	12 mass entertainment

EXAMPLE
Picture A *8 (Positive effect)* *3 (Negative effect)*

Listening

Technology and work

1 Listen to four people describing the effects of new technology on their work. Match each person to his / her job.



1 Vera	a shop owner
2 Christine	b doctor
3 Gupta	c musician
4 Anton	d teacher

2 Listen again. Decide whether each person makes comments which are positive, negative, or both. Tick (✓) the correct column(s).

	Positive	Negative
1 Vera	____	____
2 Christine	____	____
3 Gupta	____	____
4 Anton	____	____

3 Work in pairs. Listen to the shop owner again and write down what he says. Help each other to make a complete and accurate version. Then compare with the Listening script on p.124.

Language spot

Comparisons with adjectives and adverbs

- The speakers are comparing how things are *now* with how they were *before*:
  *It's much **faster**.*
  *It's more **realistic**.*
  *It's **safer**.*
  *My sales are much **worse**.*

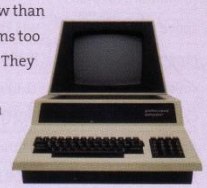
- We make comparisons with short adjectives like *fast* by adding *-er* → *faster*.
  With long adjectives like *realistic*, we use *more* and *less* → ***more / less** realistic*.
  Note the irregular forms: *good* → *better* and *bad* → *worse*.

- Some adverbs are the same as adjectives, for example *early, fast, high, late*. With these adverbs, we use *-er* → *earlier, faster, higher, later*.
  With adverbs ending in *-ly*, we use *more* and *less*. We can add *much* to emphasize the comparison:
  *With a computer I can work **more efficiently** and **much faster**.*

» Go to **Grammar reference** p.115

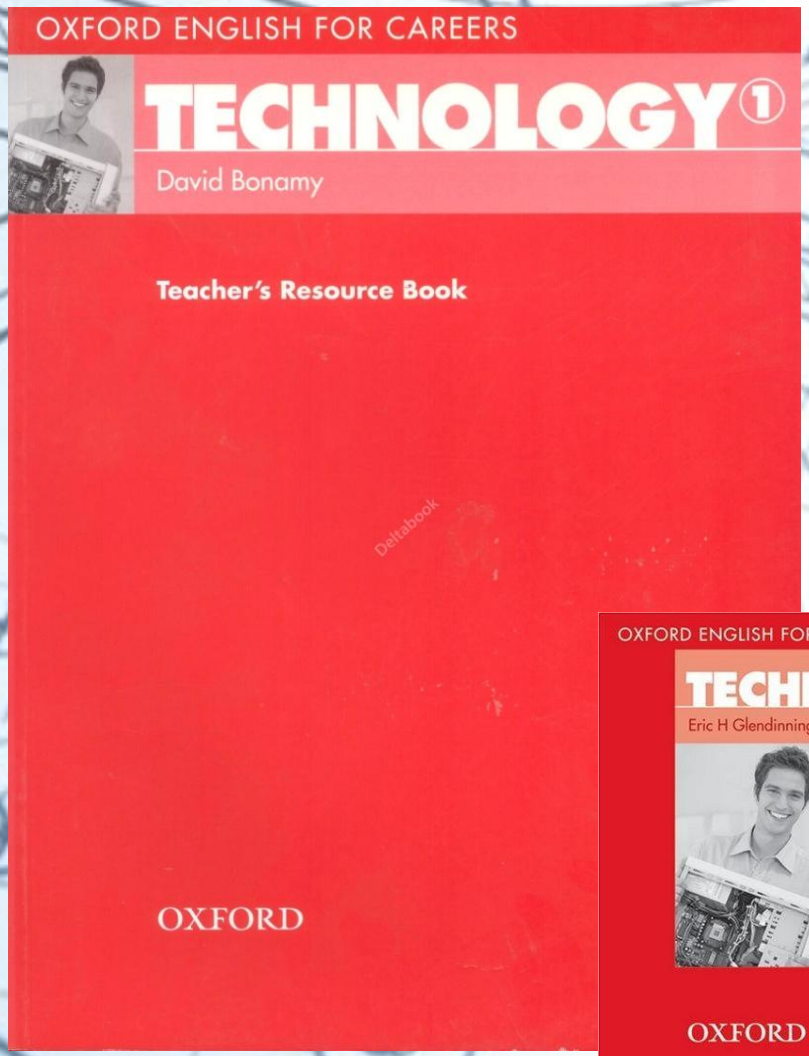
1 Fill the gaps to compare computers now and ten years ago. Use the adjectives in brackets.

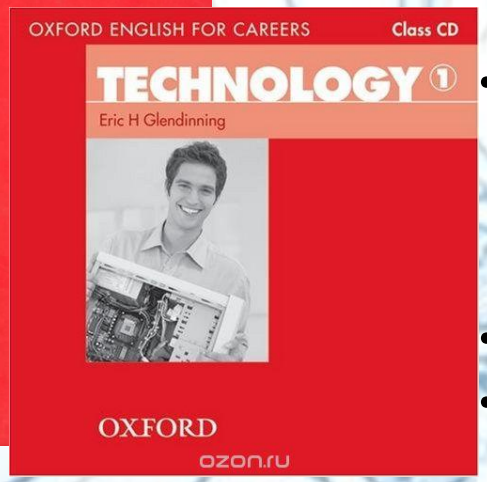
Computers today are *more powerful* [1] (powerful). They operate _____ [2] (fast) and they have much _____ [3] (large) memories. Because they contain more electronics, the cases have become _____ [4] (big) but the flat-screen monitors are _____ [5] (heavy) and fit into a _____ [6] (small) space on your desk. Computers are also _____ [7] (cheap). The price is _____ [8] (low) now than in the past. The programs too are _____ [9] (good). They are _____ [10] (sophisticated) and you can work much _____ [11] (efficiently).



Oxford English for Careers Technology 1

Teacher's Book + CD

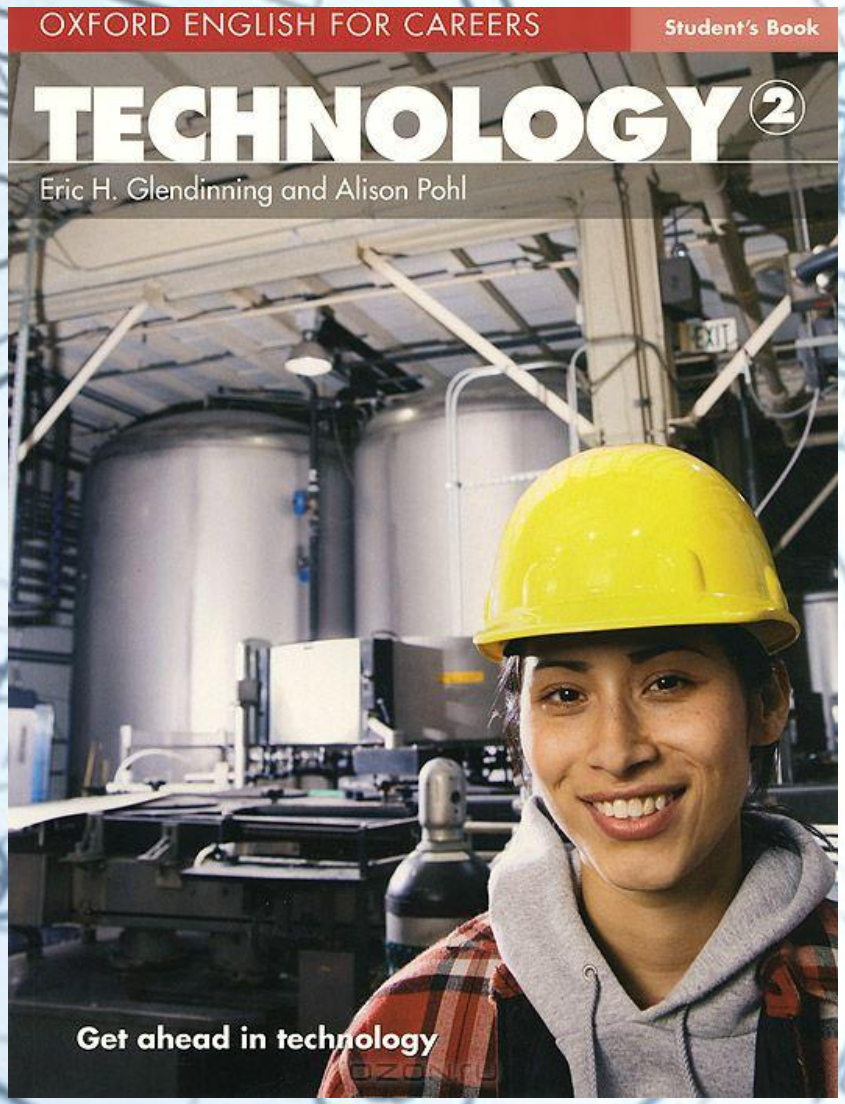




Книга для учителя содержит:

- Полный обзор методических ресурсов и практических советов для преподавателей.
- Вводную информацию для преподавателя, которая помогает лучше понять суть профессиональных вопросов.
- Материалы для ксерокопирования по грамматике.
- Материалы для ксерокопирования по отработке лексики в коммуникативном контексте.
- Ответы к заданиям.
- Включены скрипты к аудиоупражнениям.

Oxford English for Careers
Technology 2



Автор: Eric H. Glendinning and Alison Pohl
Издательство: Oxford University Press
Год издания: 2008
Уровень сложности: Intermediate

Учебник, предназначен для развития навыков общения на английском в отраслях, связанных с высокими технологиями. Он позволит Вам представлять свои идеи, решать проблемы и обсуждать последние технические достижения.

Учебник включает лексический набор, обзорную информацию, освящают все навыки, которыми должен обладать человек определенной профессии

В комплект также входят: книга для учителя и аудио CD

Oxford English for Careers Technology 2


74 Unit 10

10 Environmental engineering

Switch on

1 Make a list of what causes environmental pollution. Look at the pictures for some ideas.

2 Environmental technology tries to reduce and overcome the effects of pollution. Match the topics 1–7 with the pictures A–G.

1 Water purification
2 Solid waste management
3 Recycling
4 Remediation
5 Renewable energy
6 Flue gas treatment
7 Sewage treatment

Ключевые особенности:

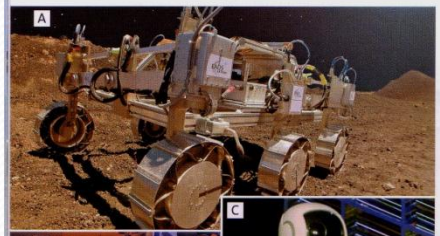
- Учебник состоит из 15 разделов.
- информация "из первых рук": авторы учебника - профессионалы в своей области.
- новая лексика изучается в контексте: студентам предлагается "проиграть" новый материал в реальных рабочих ситуациях (на примере аутентичных текстов).
- Каждый раздел включает: специализированную лексику, общую грамматику и практические навыки в определенной области.
- «Это моя будущая профессия» - аутентичные тексты, в которых люди рассказывают о своей будущей профессии.
- Дополнительные интерактивные упражнения для практики языка и повторения пройденного материала.
- Включены скрипты к аудиоупражнениям.
- Содержит глоссарий.

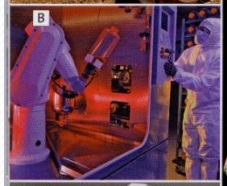
Oxford English for Careers
Technology 2

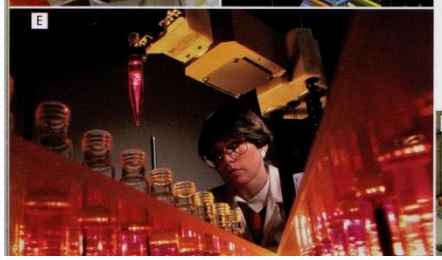
11 Robotics

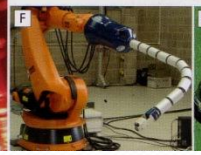
Switch on

Work in small groups. What could these robots be used for? Compare answers with others in your group and provide reasons to support your answers.









Reading

How robots work

1 Study the opening sentences for each paragraph in this textbook extract. Predict the topics of each paragraph.

First sentence	Possible topics
1 Robots have five basic components: a movable structure, a motor, a power source, a sensory system, and a processor.	
2 The motor provides the physical power to move the structure.	
3 In the same way that humans depend on sight, hearing, taste, smell, and touch to make sense of the world, robots require a sensory system in order to function.	
4 Heat sensors may be important for robots working in extreme conditions.	
5 The brain of a robot is the processor.	

2 Try to answer these questions before you read. Compare answers with others in your group.

1 In what ways can robots move?
2 What kinds of motor can robots have?
3 What kinds of power source can robots have?
4 What does the sensory system do?
5 What does the processor do?

3 Now read the text to check your predictions in 1 and your answers in 2.

In this unit

- predicting text content by sampling key sentences
- listening and note-taking
- ways to describe causing, preventing, and enabling links
- how to improve your presentation skills
- sharing ideas on how to solve a problem

Robots – moving, powering, feeling, and thinking

Robots have five basic components: a movable structure, a motor, a power source, a sensory system, and a processor. The entire robot may move, on legs in the case of Honda's Asimo, on wheels, or on caterpillar tracks in the case of Urbie, or only one part may move, such as the arm of an industrial robot.

The motor provides the physical power to move the structure. It may be electric, pneumatic, or some form of heat engine. All motors require a source of power. In the case of mobile robots, the usual source is a battery. The problem with batteries is that they are heavy and run down quite quickly. In future there may be robots which use biological fuel which they collect as they move. Compressed air, in tanks for mobile robots or directly from a compressor for fixed robots, is the power source for pneumatic systems.

In the same way that humans depend on sight, hearing, taste, smell, and touch to make sense of the world, robots require a sensory system in order to function. Sensors feed information to the processor. The information provided depends on the function of the robot. Location is important for most robots. Industrial robots must be capable of placing items or performing actions in exactly the right place. With some robots, location is controlled by placing electronic tracks for the robot to follow. Container handling in ports can be done by robotic vehicles following such tracks.

Heat sensors may be important for robots working in extreme conditions. Sensors which measure the pressure exerted by robot arms or pincers are important for robots which pick up or handle delicate items. For robots which walk or climb stairs, information on weight distribution and balance is important. Robots which look for some types of explosive need sensors which can detect chemical smells. Robots which have to navigate over unfamiliar ground, such as the Mars Rover, have digital cameras to help them identify obstacles and select navigable routes.

The brain of a robot is the processor. It controls the operation of the robot. It is programmed to allow the robot to carry out a series of actions and to respond to feedback from the sensory system. In the case of a simple robot, such as a domestic vacuum cleaner, the program may instruct the robot to turn 90 degrees when it collides with an obstacle.

Problem-solving

1 Robotic vacuum cleaners which can clean floor surfaces by themselves are becoming more common. Work with a partner to list the kinds of sensors they need.

2 Listen to this short talk by a Sales Rep at a trade fair about how a robotic vacuum cleaner works. Note down information about one of the types of sensor it uses. Your teacher will advise you which type to listen for. Note what the sensors detect and how they do this.

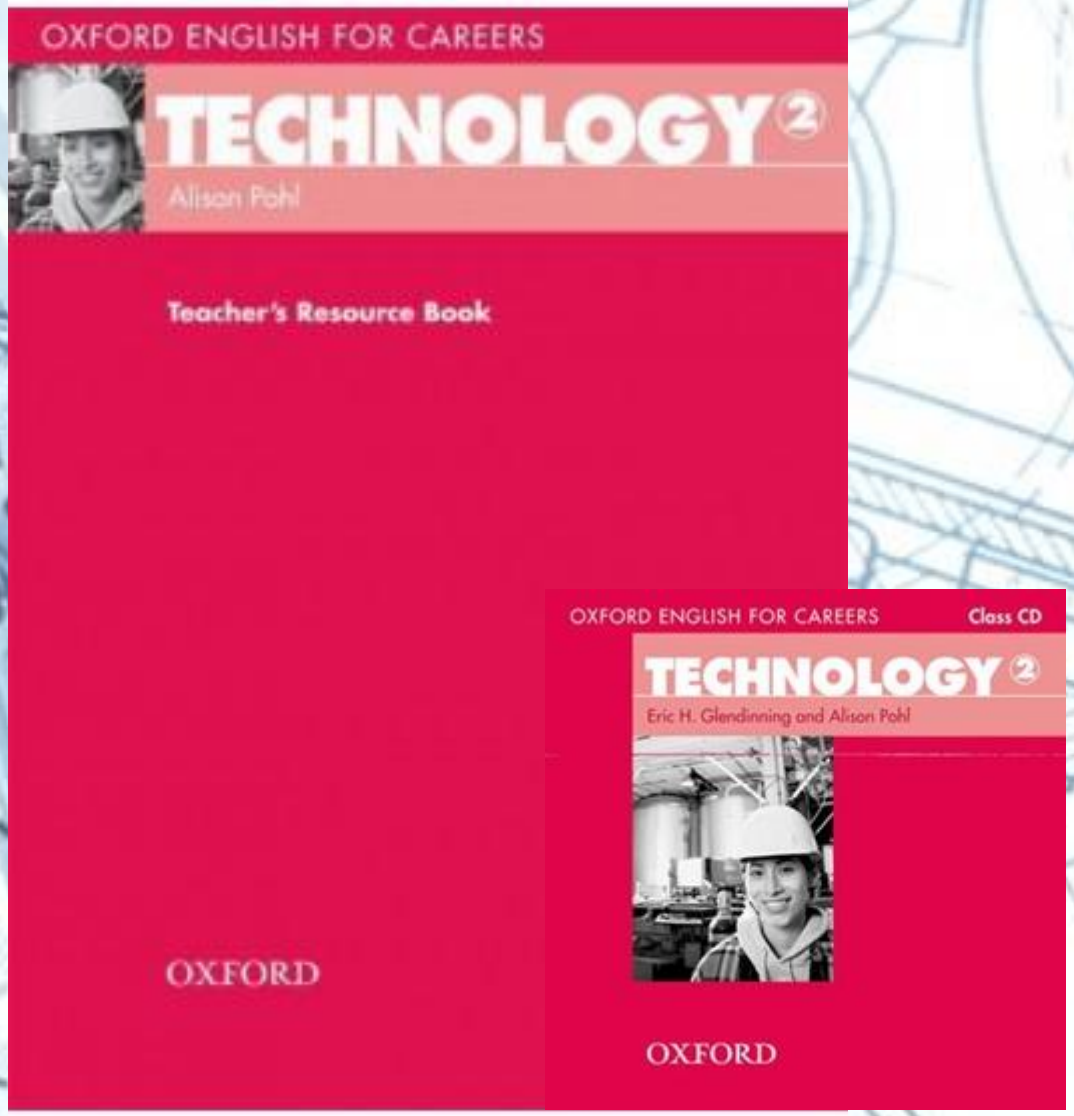
3 Now exchange information with others in your class to complete the table.

4 Listen again and check your answers.

Sensors	Notes
dimension sensors	
object sensors	
cliff sensors	
wall sensors	
dirt sensors	

Oxford English for Careers Technology 2

Teacher's Book + CD



Книга для учителя содержит:

- Полный обзор методических ресурсов и практических советов для преподавателей.
- Вводную информацию для преподавателя, которая помогает лучше понять суть профессиональных вопросов.
- Материалы для ксерокопирования по грамматике.
- Материалы для ксерокопирования по отработке лексики в коммуникативном контексте.
- Ответы к заданиям.
- Включены скрипты к аудиоупражнениям.

СПАСИБО ЗА ВНИМАНИЕ!!!

РЦЯП ИМОЯК 423 ауд.