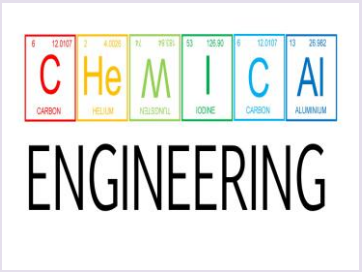
E. V. Dvoretskaya, T. V. Mordovina

PROFESSIONAL COMMUNICATION IN ENGLISH: BIOTECHNOLOGY AND CHEMICAL ENGINEERING



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Е. В. Дворецкая, Т. В. Мордовина

ПРОФЕССИОНАЛЬНАЯ КОММУНИКАЦИЯ НА АНГЛИЙСКОМ ЯЗЫКЕ: БИОТЕХНОЛОГИЯ И ХИМИЧЕСКАЯ ТЕХНОЛОГИЯ

Утверждено Ученым советом университета в качестве
мультимедийного электронного учебного пособия
для магистрантов биотехнологических, химико-технологических и
нанотехнологических специальностей дневной и заочной форм обучения

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Способствует овладению английским языком в сфере профессиональной, научной и учебной деятельности и формирования способности и готовности к межкультурному общению. Развивает словарный запас в области профессионального дискурса.

Предназначено для магистрантов биотехнологических, химико-технологических и нанотехнологических специальностей дневной и заочной форм обучения.

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CONTENTS

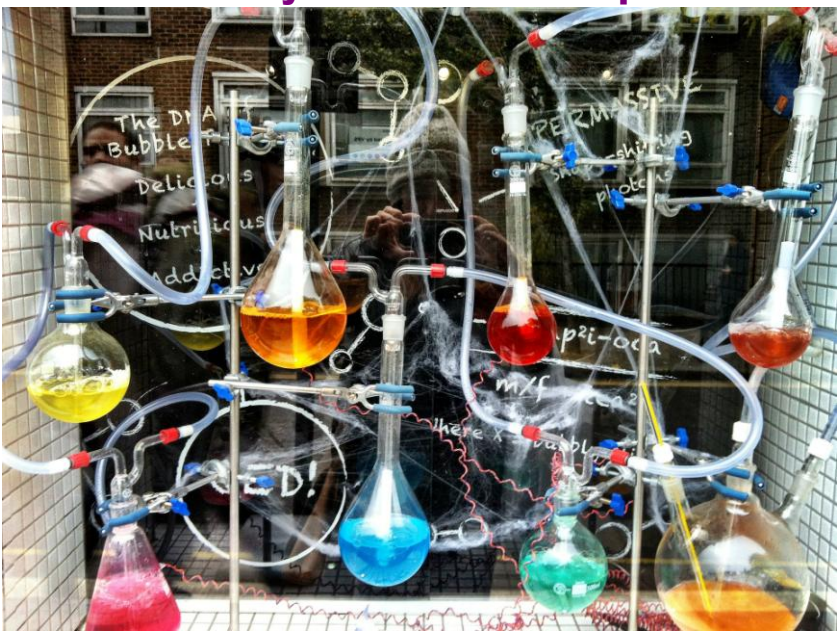
ВВЕДЕНИЕ

Настоящее учебное пособие предназначено для обучения магистрантов биотехнологических, химико-технологических и нанотехнологических специальностей, изучающих английский язык на уровне средний и выше среднего (*Intermediate/Upper-Intermediate*). Главными целями пособия являются формирование у студентов представления о структуре и стиле научно-профессиональных текстов, развитие словарного запаса студентов в области био-, нано- и химтехнологий, обучение культуре иноязычного устного и письменного академического общения и развитие общей лингвистической, прагматической и межкультурной компетенций. Несомненным достоинством пособия является ориентированность заданий на развитие не только собственно языковых навыков обучающихся, но и формирование навыков и умений, необходимых для успешного профессионального обучения в целом, таких как навыки конспектирования лекций, академического письма и критического мышления.

Учебное пособие состоит из четырех частей. Разделение на части (units) производится по тематическому принципу, что позволяет студентам ознакомиться с различными терминологическими слоями лексики. Первая часть посвящена изучению основных понятий химии, химической и биотехнологии. Вторая часть знакомит с основами деловой коммуникации в профессиональной среде. В третьей части пособия основное внимание уделяется навыкам академического письма, а четвертая часть готовит к обучению и стажировкам в зарубежных университетах. Вместе с тем, все части пособия объединяет нацеленность на изучение профессиональной и общенаучной лексики и стиля научно-профессиональных текстов в целом, что способствует выработке системных навыков устного и письменного профессионального общения.

UNIT 1 BIOTECHNOLOGY AND CHEMICAL ENGINEERING

1A. Key Terms and Concepts



1. Read the text and answer the questions.

CHEMISTRY IS EVERYWHERE!

Everything you hear, see, smell, taste, and touch involves chemistry and chemicals (matter). And hearing, seeing, tasting, and touching all involve intricate series of chemical reactions and interactions in your body. With such an enormous range of topics, it is essential to know about chemistry at some level to understand the world around us.

In more formal terms chemistry is the study of matter and the changes it can undergo. Chemists sometimes refer to matter as 'stuff', and indeed so it is. Matter is anything that has mass and occupies space. Which is to say, anything you can touch or hold. Common usage might have us believe that 'chemicals' are just those substances in laboratories or something that is not a natural substance. Far from it, chemists believe that everything is made of chemicals.

Although there are countless types of matter all around us, this complexity is composed of various combinations of some 100 chemical elements. The names of some of these elements will be familiar to almost everyone. Elements such as hydrogen, chlorine, silver, and copper are part of our everyday knowledge. Far fewer people have heard of selenium or rubidium or hassium.

Nevertheless, all matter is composed of various combinations of these basic elements. The wonder of chemistry is that when these basic particles are combined, they make something new and unique. Consider the element sodium. It is a soft, silvery metal. It reacts violently with water, giving off hydrogen gas and enough heat to make the hydrogen explode. Nasty 'stuff'. Also consider chlorine, a green gas when at room temperature. It is very caustic and choking, and is nasty enough that it was used as a horrible chemical gas weapon in the last century. So what kind of horrible mess is produced when sodium and chlorine are combined? Nothing more than sodium chloride, common table salt. Table salt does not explode in water or choke us; rather, it is a common additive for foods we eat everyday.

And so it is with chemistry, understanding the basic properties of matter and learning how to predict and explain how they change when they react to form new substances is what chemistry and chemists are all about.
Chemistry is not limited to beakers and laboratories. It is all around us, and the better we know chemistry, the better we know our world.

1. What is chemistry? Why is it important to learn it?
2. An example of which chemical reaction is given in the text?
3. Think of more reactions that we make use of in our everyday life.

2. Basic chemical concepts. Fill in the gaps with the words below.

covalent bond element formula atoms compound nucleus (x2) electrons (x2) equations molecules

1. All substances are made from _____.
2. Atoms have a small central _____ surrounded by even smaller particles called _____. The _____ is positively charged, and the _____ are negatively charged.
3. Any given _____ is made of atoms of just one particular sort. The atoms of any element are different to the atoms of any other element. So iron is made from a different sort of atom to sulfur, and carbon atoms are different to oxygen atoms.
4. A _____ consists of two or more atoms from different elements chemically joined together.
5. A _____ forms when two atoms share a pair of electrons. The atoms involved are non-metals such as carbon, oxygen and hydrogen. They join together to form _____.

6. The chemical _____ of a compound tells you how many atoms of each element the molecule contains.
7. Chemical _____ show what happens in a reaction. In general, we write: reactants → products. For example, $2Cu + O_2 \rightarrow 2CuO$

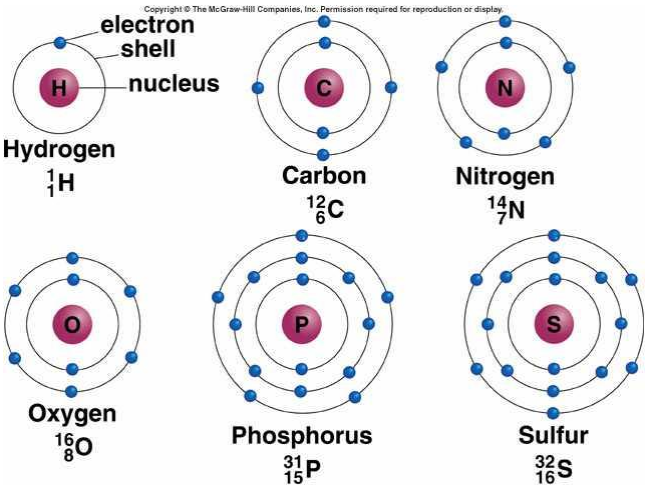
3. Below you will see the names of some common substances and their formulas. Study the information and write the name of other substances.

name	formula
oxygen	O_2
carbon	C
carbon dioxide	CO_2
potassium	K
calcium oxide	CaO
zinc	Zn
magnesium	Mg
calcium carbonate	$CaCO_3$
hydrochloric acid	HCl
sodium chloride	NaCl
ammonium sulfate	$(NH_4)_2SO_4$
nitrogen	N_2
hydrogen	H_2

KCl _____
HNO_3 _____
$CuSO_4$ _____
H_2O _____

$MgSO_4$ _____
$CaCl_2$ _____
ZnO _____
Na_2CO_3 _____

4. Study the chart below. Use the information from the chart to describe the atomic structure of the given elements.



Example: Each atom consists of a very small nucleus composed of protons and neutrons which is encircled by moving electrons. The carbon atom has six electrons, 4 of the electrons are in its outer (valence) shell. The nucleus consists of 6 protons and 6 neutrons. The number of protons corresponds to the atomic number of the element, thus, the atomic number of carbon is 6.

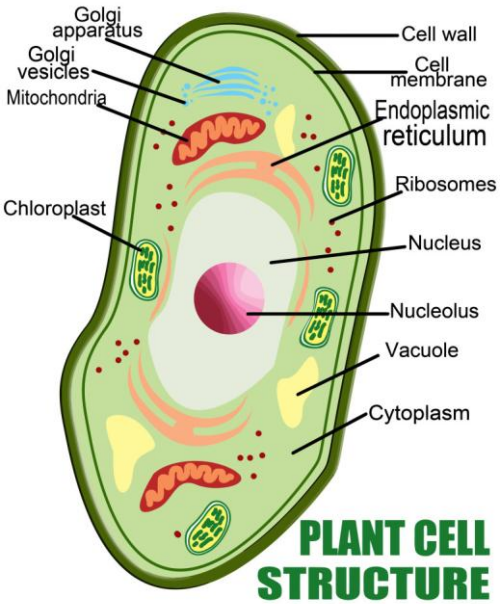
5. Many nouns used in scientific texts are of Latin or Greek origin. Some of them have kept their original singular and plural forms. Do you know what they are?

Singular	***Plural***
phenomenon	_____
_____	criteria
medium	_____
stratum	_____
_____	data
index	_____
formula	_____
_____	radii
nucleus	_____
_____	analyses

More irregular plurals. Underline the correct variant.

1. Many doctors, many diagnoses/diagnosis.
2. The last decade saw at least three serious global crisis/crises.
3. Usually a research proves just one hypotheses/hypothesis.
4. We have little knowledge of how bacteria react to these stimulus/stimuli.
5. The research addresses just one phenomenon/phenomena out of many.
6. How many criteria/criterion do you use in your evaluation?
7. As a result a new bacterium/bacteria was discovered and described.
8. Used as a preservative, salt deprives bacteria of a nutrient media/medium, absorbing moisture and preventing product decay.
9. This is a/- very peculiar species of yeast.
10. Pneumonia is caused by a number of infectious agents, including viruses, bacteria and fungus/fungi.
11. The matrix/matrices were arranged in rows and columns.
12. The alga/algae uses a number of special light-sensitive proteins to sense the light.

6. Look at the diagram of a plant cell structure. Study it and complete the gaps in the description.



Plants are unique among the eukaryotes, organisms whose cells have membrane-enclosed nuclei and organelles, because they can manufacture their own food. Chlorophyll, which gives plants their green color, enables them to use sunlight to convert water and carbon dioxide into sugars and carbohydrates, chemicals the cell uses for fuel.

Plant cells have a number of specialized structures that make them different from other types of cells.

Plant cells have a rigid _____ surrounding the plasma membrane. It is a far more complex structure, however, and serves a variety of functions, from protecting the cell to regulating the life cycle of the plant organism.

The most important characteristic of plants is their ability to photosynthesize, in effect, to make their own food by converting light energy into chemical energy. This process is carried out in specialized organelles called _____.

The _____ is a network of sacs that manufactures, processes, and transports chemical compounds for use inside and outside of the cell. It is connected to the double-layered nuclear envelope, providing a pipeline between the nucleus and the cytoplasm.

The _____ is the distribution and shipping department for the cell's chemical products. It modifies proteins and fats built in the endoplasmic reticulum and prepares them for export as outside of the cell.

_____ are oblong shaped organelles found in the cytoplasm of all eukaryotic cells. In plant cells, they break down carbohydrate and sugar molecules to provide energy, particularly when light isn't available for the chloroplasts to produce energy.

The _____ is a highly specialized organelle that serves as the information processing and administrative center of the cell. This organelle has two major functions: it stores the cell's hereditary material, or DNA, and it coordinates the cell's activities, which include growth, intermediary metabolism, protein synthesis, and reproduction (cell division).

Each plant cell has a large, single _____ that stores compounds, helps in plant growth, and plays an important structural role for the plant.

Use your knowledge and describe the remaining structures of a plant cell from the diagram.

1B. Biotechnology

1. Discuss with a partner:

a) How is biotechnology different from other engineering fields?
b) What examples of biotechnology products do you know?

2. Read the text and choose the most suitable heading for each paragraph (there is one extra):

a) Biotechnology products
b) Biotechnological innovations
c) Biotechnology in early ages
d) What is biotechnology?
e) The discovery of antibiotics
f) Application of biotechnology in medicine

WHAT IS BIOTECHNOLOGY?

1. _____

Biotechnology is a branch of science that seeks to improve human life by utilizing and improving upon biological processes and interactions to create new technology and products. Biotechnology has been used by humans for thousands of years in a variety of ways.

2. _____

Some of the earliest human uses of biotechnology were the domestication of animals and cultivation of crops for consumption. Other early uses of biotechnology were in specialized breeding programs of food staples by farmers that resulted in crops with high yields that could sustain the larger populations necessary for human society to thrive after the Neolithic Revolution. Biotechnology relating to food and drink also includes leavening yeast for bread and fermentation practices for beer and wine.

3. _____

In 1928, Alexander Fleming accidentally discovered the mold culture that would eventually became the basis for the antibiotic penicillin. This organism's contribution to human health through its application in the treatment of infections is an example of biotechnology in action. Penicillin and its subsequent drug classes have been in use since 1940.

4. _____

Biotechnology is being used to develop new products and technology to fight diseases, reduce pollution, improve agriculture and manufacture products while creating less pollution and waste. According to the Biotechnology Industry Organization, there are more than 250 biotechnology products available, including medicines, vaccines, fertilizers, pest-resistant crops, bio-fuels and bio-defense products. Some specific bio-tech products include an anthrax detection device, non-browning apples, snake venom antitoxin, insulin, ethanol and Treethanol, which is a fuel made from tree cellulose.

5. _____

In the medical field, companies are using biotechnology to develop new drugs more rapidly and efficiently. Biotechnology identifies genes and proteins that are associated with diseases. The companies use the genes as drug targets and diagnostic markers. They screen thousands of compounds to identify effective drugs. They refine the chemicals, check for toxicity, and then move into clinical trials.

3. Answer the questions:

1. Which of the following is NOT an example of traditional use of biotechnology:
    a) breeding crops and domestic animals
    b) medical drugs
    c) bread production technology
2. What is the role of Alexander Fleming in the development of biotechnology?
3. According to the text, which industrial areas is biotechnology applied to?

4. Fill in the gaps with the words below.

clinical trials yeast pollution fertilizers crops compounds yield pests fuel diseases

1. Organic food is produced without the chemical _____ and pesticides.
2. Synthetic pesticides sprayed on crops to check insect _____ also kill non-target insects.
3. More energy is used to cool buildings and more air _____ is created in the form of smog.
4. So far only 120 plant derived chemical _____ have been developed into modern drugs.
5. The company said _____ showed the drug helps patients achieve lower blood sugar.
6. Biodiesel is a cleaner burning _____ that can be made from domestic renewable resources such as vegetable oil.
7. Allowing genetically modified _____ to be grown in this country could lead to protests by environmentalists.
8. The inclusion of _____ results in fermentation and causes the dough to rise, if it is left in a warm place.
9. The value of animal research for finding new treatments for human _____ is a continuing debate.
10. The complete metabolism of cane sugar and its complete combustion _____ the same products: carbon dioxide and water.

5. Many scientific terms sound the same in English and in your native language. For example, the English word *insulin* is similar to the Russian word *инсулин* with the same meaning: "A hormone which regulates the amount of glucose in the blood."
Make a list of such similar words from the text and try to explain them in English.

6. Match the words and phrases in the table to their definitions.

1. genetically modified	5. habitat	9. daft	13. cautious
2. vaccine	6. extinct	10. altered	14. dominate
3. ecosystem	7. a guinea pig	11. havoc	15. a knock on effect
4. global warming	8. climate change	12. cynical	16. debate

Definitions:

a) confusion and disorder
b) an increase in the world temperature caused by gasses like CO_2
c) to control someone totally
d) describes a person who thinks people are selfish – someone who doesn't trust anyone
e) an type of medicine that prevents people from getting a disease
f) a formal discussion
g) something that happens because of the event that happened before
h) describes a plant or animal that has been changed by scientists
i) all the animals and plants living in an area
j) changed, generally improved
k) when all the individuals of a species have died (like dinosaurs and the dodo)
l) someone who is used in a test for something such as a new medicine or product
m) describes a silly or stupid person
n) the natural home of an animal or plant
o) the way the world's weather is changing
p) describes someone who is very careful

7. Listen to two students, Ann and Frank, talking about genetically modified food (Recording 1.1). Who is for and who is against GM food?

Listen to the conversation again and decide whether these statements are true or false.

1. Frank thinks Ann has been influenced by the newspapers.
2. Frank thinks non-GM foods are safer than GM foods.
3. Scientists have worked out a way of introducing a vaccine into bananas.
4. Ann thinks food companies will make money out of feeding poor countries.
5. Frank thinks Ann is being negative.
6. Ann is worried about guinea pigs becoming extinct.

8. Read this summary of the conversation between Frank and Ann and choose the correct words.

Frank is in favour of genetically modified food because he believes it can help to _____(1) food for poor countries. He also thinks it should be used to make more vitamin-enhanced _____(2) and to change the habitats of species that are in danger of losing their habitats and becoming _____(3). Ann disagrees. She thinks GM foods are _____(4) and potentially _____(5). She is worried about rich countries dominating poor countries when they control the food supplies. She doesn't like the fact that companies are using her for their GM _____(6). Ann thinks that GM food is responsible

for the _____(7) in the numbers of some birds. Frank says there is _____(8) evidence to prove this.

1. provide / save
2. vegetables / meat
3. extinct / ill
4. tasteless / unnatural
5. expensive / dangerous
6. advertising / experiments
7. rise / fall
8. no / some

9. Debate the following topic:

Biotechnology can be both a great benefit and a great burden on our society in the future.

Do you agree or disagree with this statement? Give reasons for your answer and include any relevant examples from your own knowledge or experience.

1C. Chemical Engineering

WHAT DO CHEMICAL ENGINEERS DO?

Chemical engineering is the branch of engineering that deals with chemical production and the manufacture of products through chemical processes. This includes designing equipment, systems and processes for refining raw materials and for mixing, compounding and processing chemicals to make valuable products. From the development of smaller, faster computer chips to innovations in recycling, treating disease, cleaning water, and generating energy, the processes and products that chemical engineers have helped create touch every aspect of our lives.

Chemical engineers have been improving our well-being for more than a century. George E. Davis, an English engineer, is credited with founding the field of chemical engineering in the late 19th century. He published the first truly comprehensive overview of the practice in his two-volume "Handbook of Chemical Engineering" (Davis Bros., 1901; revised 1904), based on a series of 12 lectures he gave at the Manchester School of Technology (now part of the University of Manchester). Interestingly, he never taught another course in his lifetime, opting to devote his career to consulting. His handbook, however, would serve as the fundamental text for chemical engineering studies for decades to come.

Chemical engineering combines a background in chemistry with engineering and economics concepts to solve technological problems. Critical skills needed in chemical engineering are an in-depth understanding of chemistry, mechanical

engineering and fluid dynamics. Additionally, manufacturing facilities can be quite large, and structural considerations must be taken into account. For this reason, chemical engineers often need knowledge of structural engineering.
More and more, chemical engineers rely on computer-aided design (CAD) systems to create chemical plants and equipment. CAD systems allow for quick and easy modifications of designs.
Chemical engineers work in manufacturing, pharmaceuticals, healthcare, design and construction, pulp and paper, petrochemicals, food processing, specialty chemicals, microelectronics, electronic and advanced materials, polymers, business services, biotechnology, and environmental health and safety industries, among others.
Chemical engineering jobs fall into two main groups: industrial applications and development of new products. Chemical engineers may spend time at industrial plants, refineries and other locations, where they monitor or direct operations or solve on-site problems.

Fill in the gaps in the description using the information from the chart.

Main Components of Distillation Columns

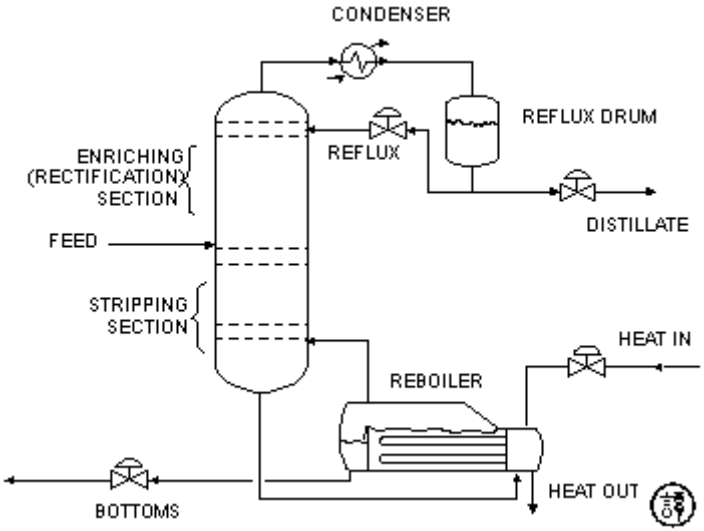
Distillation columns are made up of several components, each of which is used either to transfer heat energy or enhance material transfer. A typical distillation unit contains several major components:

- a vertical shell where the separation of liquid components is carried out
- column internals such as trays/plates and/or packings which are used to enhance component separations
- a 1)_____ to provide the necessary vaporisation for the distillation process
- a 2)_____ to cool and condense the vapour leaving the top of the column
- a 3)_____ to hold the condensed vapour from the top of the column so that liquid (reflux) can be recycled back to the column

The liquid mixture that is to be processed is known as the 4)_____ and this is introduced usually somewhere near the middle of the column. The feed tray divides the column into a top (5)_____ or 6)_____) section and a bottom (7)_____) section. The feed flows down the column where it is collected at the bottom in the reboiler. The liquid removed from the

reboiler is known as the 8)_____. The condensed liquid that is removed from the system is known as the 9)_____ or top product.

The vertical shell houses the column internals and together with the condenser and reboiler, constitute a distillation column. A schematic of a typical distillation unit with a single feed and two product streams is shown below:

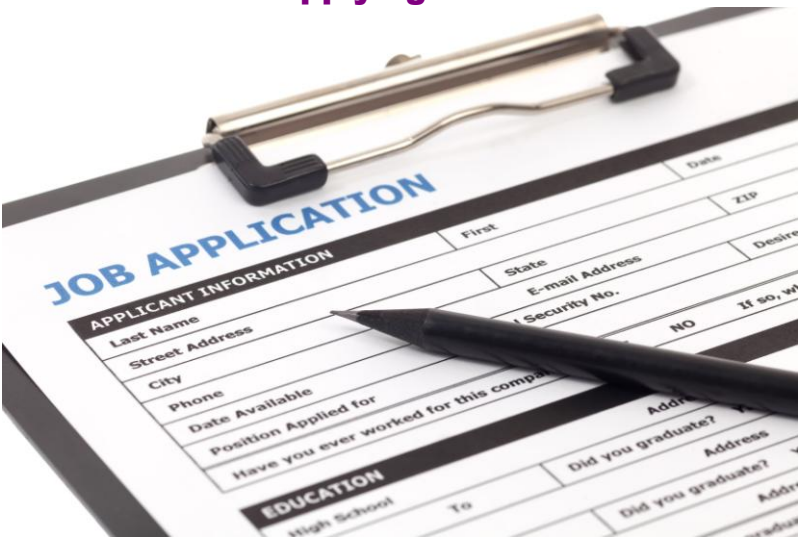


Write down the Russian translation of the terms above. Use a dictionary to help you.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

UNIT 2 PROFESSIONAL COMMUNICATION

2A. Applying for a Job



1. Work in small groups and answer these questions:

a) Have you got a job? If yes, do you like it?

b) If you need to find a (new) job, what should you do?

2. Which factor is most important when looking for a new job? Rank the following points in terms of importance and then discuss your reasons.

3. Read the advertisements and find out the main requirements for the jobs.

Research Scientist

Employer FUJIFILM Diosynth Biotechnologies

Position Type Permanent
Discipline Life Sciences, Biophysics, Biotechnology, Pharmacology
Salary £21,902 – £42,098 (Depending on Experience)

FUJIFILM Diosynth Biotechnologies is a biopharmaceutical company within FUJIFILM Corporation with development and manufacturing sites in Billingham & Wilton, UK, Research Triangle Park, North Carolina and College Station, Texas, USA employing over 1000 staff. Globally we have over 35 years of clinical and commercial experience in biopharmaceutical development and GMP manufacturing. We are one of the world's leading manufacturers of GMP drugs through the continuous innovation of technologies, service delivery and quality – contributing to the enhancement of the quality of life of people worldwide.

We are recruiting a number of scientists in Mammalian Cell Culture Upstream Platform Operations in our Research & Development department within FUJIFILM Diosynth Biotechnologies, Wilton, UK in a brand new, state of the art facility. Highly motivated individuals are sought to join a group of scientists working to establish recombinant monoclonal antibody platform processes suitable for the manufacture of biotherapeutics. The available positions are for Research Scientists / Senior Research Scientists based on qualifications and experience.

The successful candidates will be laboratory-based and working as part of the Upstream Mammalian Cell Culture Platform Operation group.

Education and Experience

- A life science degree (BSc / MSc) with relevant biotech/pharmaceutical industry experience within the areas advertised.

Technical Skills Requirements

- Knowledge of mammalian cell line expression platforms and / or cell culture process development strategies;
- Practical experience in aseptic technique and mammalian cell culture methods;
- Experience of transfection / cloning techniques and / or operation and control of stirred tank, laboratory scale (1-10L) mammalian cell culture bioreactors is a plus.

Other Competencies

- Be flexible, self-motivated and have the ability to work as part of a team;
- Ensure a high standard of science and quality of work are maintained;
- Contribute to the efficient running and continuous improvement initiatives of your functional area within the multi-disciplinary, team orientated R&D department;

- Able to communicate progress of projects by both verbal presentations and written reports to both internal and external customers.

We offer a generous benefits package including:

- Competitive salary plus company bonus scheme;
- Up to 35 days of holiday, plus bank holidays;
- Salary Sacrifice scheme offering childcare vouchers, bikes, dental etc.;
- Generous pension scheme.

For further information please contact Emma McDormant, on emma.mcdormant@fujifilm.com . Interested applicants must complete an application form and send to HR via fdbkrecruitment@fujifilm.com no later than 12 noon on Monday 18th September 2017. If we have not contacted you within four weeks of the closing date, please assume that you have not been shortlisted on this occasion.

Do you have the qualification necessary for these jobs?
Would you like to apply for any of these positions? Why/Why not?

4. Work with a partner. Write a short advertisement for a job in your field. Include the job title, salary and details of the positions.

5. Study the terms below and complete the definitions.

a gap a job opening an entry-level job a prospective employer unemployed volunteer work

a) someone who you might work for in the future
b) a job suitable for recent graduates or people who don't have experience yet
c) work that somebody does willingly and without pay
d) a specific position that needs to be filled
e) a space or missing part
f) without a paid job but available to work

Now complete the sentences below with the words and phrases:

1. You don't have enough experience for a management job. You need to start with an _____.
2. Kate told me about an interesting _____at KP Steel. I decided to apply for it.
3. Jane is doing _____ for a charity at the moment, but she hopes to earn some money in the future.
4. You've been out of work for three years! How are you going to explain this _____ in your CV?
5. Annette is _____ at the moment. She's trying hard to find a job.
6. If you dress smart for your interview, you will impress your _____.

6. Look at the job hunting tips below. Discuss how effective or useful you think they are. Then listen to an expert on job hunting (Recording 2.1). He is going to give five tips for job seekers. Listen and tick the tips that he mentions.

Follow your passions. ___
Do some volunteer work. ___
Take short breaks. ___
Try to reach out to the decision maker directly. ___
Don't focus on your dream job now. ___
Do freelance work. ___
Practice your answers to interview questions. ___
Don't always follow your passions. ___
Don't apply for every job opening. ___

Match the verbs to the nouns to form collocations mentioned in the recording.

1. develop	a) an income
2. keep	b) a website
3. get	c) busy
4. get lost	d) in the pile
5. get back	e) into work
6. make	f) new contacts
7. earn	g) noticed

Now form your own sentence for each of the phrases.

7. Discuss any of the questions below.

1. Is it easy to find a good job in your country? Why/why not?
2. What do you think is the most difficult part about job hunting?
3. How easy is it to get a job in your field?

8. Complete the sentences using the following words:

advertisement	applicant
to advertise	to apply for
requirement	position
to require	experience
application	to provide
to assist	curriculum vitae (CV) / resume
reference	referee

1. This organization is looking for a person for the ….....of a junior researcher who will …... a Senior Scientist.
2. They placed an …..... in the local newspaper two days ago.
3. Their main …..... are experience and communicative skills. They also …..... that an applicant should be self-disciplined.
4. ….. should have a 3 years' ……. .
5. You must have two ….. from your previous work and give names of your ……. .
6. Candidates should …..... their …..... and send …..... to the address given in the newspaper where the company …..... its products.

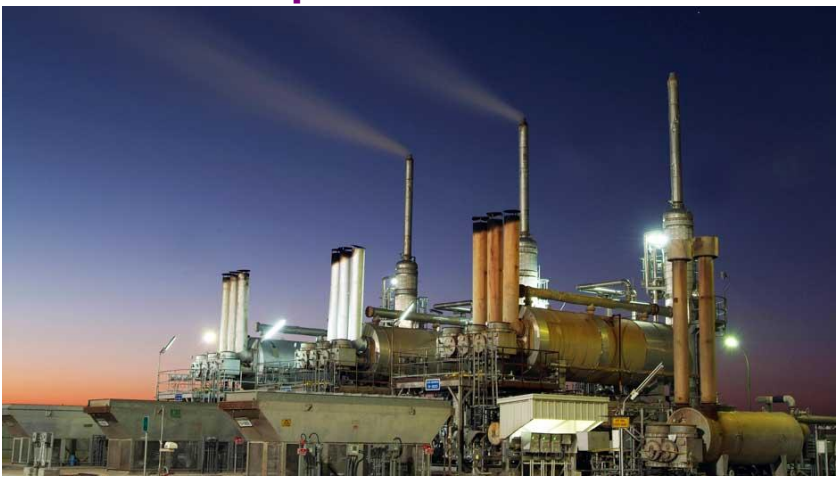
9. Complete the sentences with the words below:

charge enjoy find job most part quite responsibilities responsible what

1. I'm _____ for *cash flow/credit control/managing projects.*.
2. I'm in _____ of *developing the company's long-term strategy.*
3. My _____ include *recruiting new employees and organising training for company staff*..
4. It's also my _____ to *improve the company's working conditions*.
5. On the whole, I _____ my work.
6. What I _____ like about my work is *the responsibility, the challenge and of course the salary*.
7. I _____ my work *very interesting*.
8. One task I don't _____ like is *chasing money from late payers*.
9. The _____ I don't really like is *the long hours*.
10. _____ I don't like so much is *when I have to deal with a difficult employee*.

Work in pairs. Describe your job / your prospective job to your partner using vocabulary from this lesson.

2B. Companies and Businesses



1. Match the terms on the left with the definitions on the right:

1. founder	a) a large company that does business in several different countries
2. annual turnover	b) a part of a company that is owned by a person or by other company
3. shareholding	c) a person who establishes an organisation
4. subsidiary	d) a smaller company that is owned by another bigger company
5. division	e) one of the sectors or groups in a business or organisation
6. multinational corporation	f) the amount of business that a company does in one year

2. Listen to a description of the Toyota Motor Corporation and complete the profile below (Recording 2.2).

Company	Toyota Motor Corporation
Headquarters	
Founder	Kiichiro Toyoda
Year founded	
Year of expansion to US	
Employees	
Subsidiaries	
Turnover (2014)	
Brands owned	Lexus, Scion
Shareholdings	Daihatsu Motors, Isuzu Motors and Yamaha Motors

3. Study the following expressions used for describing a company. Listen to the recording again and tick the ones that you hear:

Headquarters
...is headquartered in... ...is based in...

History
...was founded in/by... ...was established in...

Employees
... has a workforce of ... people ... employs ... people

Size
... operates ... subsidiaries
...has shareholdings in ...
... has a ... per cent stake in ...
...runs ... stores worldwide

Market position
...is currently the world's largest...
...is the biggest ... in the world
...is one of the largest companies in ...
...has a ... per cent market share

Financial results
...achieved an annual turnover of... ...made a profit of...

Competitors
Our main competitors are...

Customers/clients
Products: Our main customers are/include...
Services: Our main clients are/include...

Products
We produce/manufacture ...

Services
We provide/offer ...

With a partner practice using the expressions above in the sentences of your own.

4. Look at the text about a biotechnology company. Where does it come from? What is its purpose?

Applikon Biotechnology

Our mission: "providing reliable solutions for the bioprocess market that will enable an improved quality of life"

Applikon Biotechnology is a world leader in developing and supplying advanced bioreactor systems from laboratory scale to production scale. We are the only company that can take a customer from the initial screening stage up to full-scale production using the same platform. This minimizes scale-up risks and guarantees the shortest time to market for our customers' new product development.

Applikon is known for bringing new technologies to the market. These new technologies offer advantages in process efficiency for research and development as well as pilot plant and production scale processes.

As a focused medium sized company we live by our motto "A Step Ahead" to differentiate ourselves from other suppliers. Our focus on developing bioreactor systems only, allows us to produce state-of-the-art equipment. This has resulted in a steady growth to the top position of the worldwide laboratory bioreactor market. The basis for our new product development lies in our strong cooperation with leading international universities and institutes.

All our efforts are focused on supplying the best solution for our clients in the biotech and pharmaceutical industry. Validation and documentation is a vital part of our development procedures and this is extended throughout our whole company.

Applikon Biotechnology is unique in the mini and micro bioreactor range. No other company can offer a complete solution on this very small scale. We develop systems on a small scale that generate results that can be scaled to production scale. At the moment there are thousands of Applikon bioreactors used in the world from small scale R&D up to full scale cGMP production.

Since we started in 1974 we have shown a healthy growth and profit. R&D is done in house in our headquarters in Delft, The Netherlands. Design and engineering is done in house but real manufacturing is outsourced. Final assembling is done in-house (in our manufacturing sites in Delft and Guangzhou) as well as the final testing and

documentation. We have our own sales and service organizations in the USA (Foster City, California and Dover, New Jersey), the UK (Tewkesbury) and China (Guangzhou). We have well trained local distributors for sales and service in over 30 countries.

We are continuously executing strategic plans to grow the top-line and strengthen our financial performance. New and ongoing programs are exploring new markets, developing innovative products, improving service to customers, increasing efficiency, and reducing costs.

Read the text quickly. Who is it aimed at?

a) Individual customers buying biotechnology products
b) Companies producing biotechnology products
c) Companies buying biotechnology products
d) Shareholders

5. Read the text again. Are these sentences true or false?

1. Applikon Biotechnology is a multinational corporation.
2. The company only supplies bioreactors to production plants.
3. Bioreactors are produced by other manufacturers according to Applikon's designs.
4. Customers in the United States have to contact the company's headquarters in The Netherlands for servicing and maintenance of bioreactors.
5. The company does not have plans for expansion.

6. Look at the text and write out all the word combinations with the following words:

scale market product solution process

Complete the sentences below with some of these word combinations:

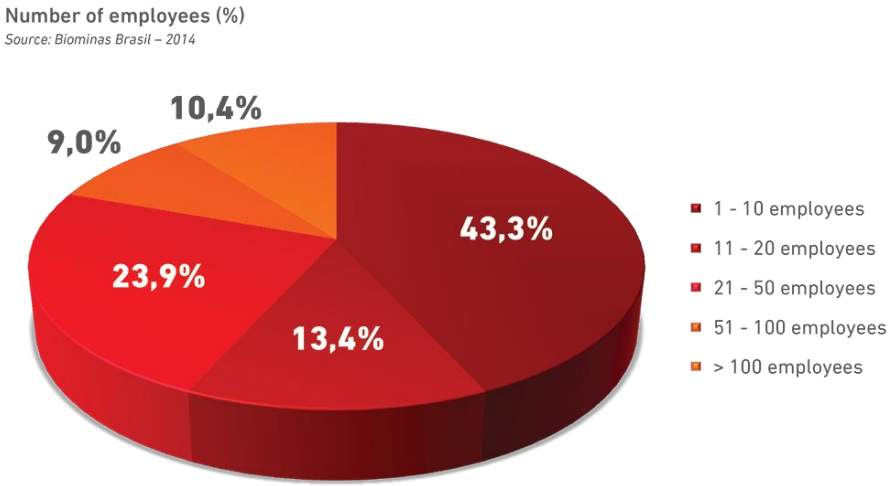
1. We had to scale things down from a full _____ to what we call a pilot demonstration scale.
2. In her new role at FutureTech Ltd., Jackie Adams is responsible for working on _____ Enhancement - streamlining processes and continuous improvement across processes.
3. The unique compact design of DesignPro's technology offers a _____ for harnessing natural resources and generating zero-carbon energy for local communities
4. Major companies are investing in new _____ to derive value product for the market.
5. The international activities offer production partners the possibility to _____ outside Europe.

7. Match the terms on the left with the definitions on the right:

1. mission	a) fit together the separate component parts of (a machine or other object)
2. screening	b) the written specification and instructions accompanying a product
3. assemble	c) any work that someone believes it is their duty to do
4. manufacturing	d) the most recent stage in the development of a product, incorporating the newest ideas and features
5. state-of-the art	e) a short sentence or phrase chosen as encapsulating the beliefs or ideals of an individual, family, or institution
6. validation	f) evaluation or investigation of something as part of a methodical survey, to assess suitability for a particular role or purpose
7. documentation	g) the action of checking or proving the validity or accuracy of something
8. outsourcing	h) the making of articles on a large scale using machinery
9. motto	i) obtaining goods or a service by contract from an outside supplier

8. Describe a company working in your engineering field, providing information about head office location, products/services, number of employees, customers/clients, competitors, financial information.

9. The chart below shows Brazilian bioscience companies, according to the number of employees. Study the data and complete the sentences:



almost twice majority exactly slightly more

1. The _____ of bioscience companies in Brazil have up to 10 employees.
2. The number of companies with more than 100 workers is ____ than 10%.
3. There are _____ as many companies employing from 21 to 50 people as there are businesses with up to 20 employees.
4. _____ nine per cent of bioscience companies have the workforce of between 51 and 100 people.

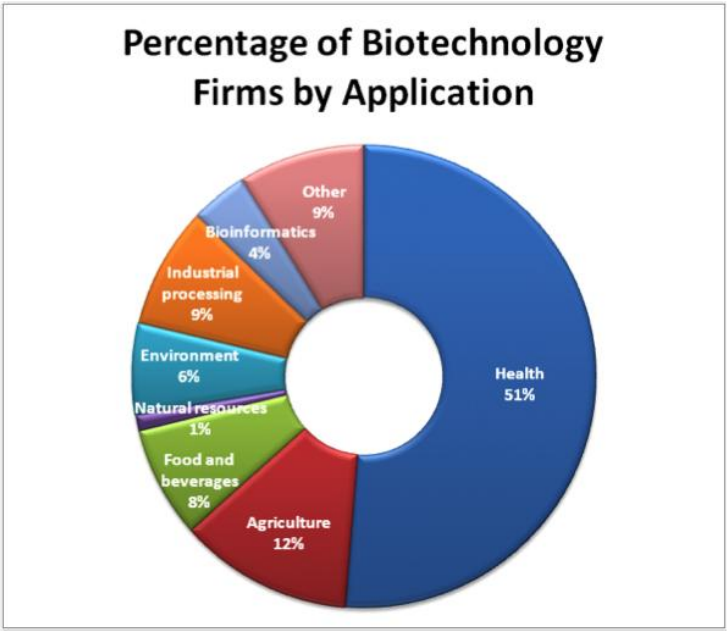
10. Learn more useful vocabulary to describe graphical data:

Percentage	Proportion/amount/number/ majority/minority	Fraction
66	A large proportion	Precisely two thirds
73	A significant majority	Approximately three quarters
25	A small number	Exactly a quarter
5	An insignificant amount	A small fraction
48	-	Almost a half
35	A good proportion	Just over a third
15	A small minority	

The provided diagram shows data on ...
The given pie chart represents the proportion of …
The chart gives information on …
The supplied graph compares the number of … in …
The table data depict …

In general, / Overall, …
It is obvious that …
As is observed, …
As can be seen, … / It can be clearly seen that …
A glance at the chart reveals that ...

11. Study the chart about the percentage of biotechnology firms working in various sectors.



Write a paragraph using the expressions from this lesson.

Tips for writing

1. Start by saying exactly what the chart shows. Avoid copying words in the question – use other words with the same or similar meaning.
2. Explain what the different sections of the chart refer too.
3. Describe the key findings shown in the chart.
4. In conclusion, summarize the bigger picture and mention the most significant percentages or trends.

2C. Innovations and Products

1. Discuss with a partner:

a) What do you consider to be the greatest innovation?
b) What innovations have happened in your lifetime?
c) What do you consider the most inspiring innovation in your professional field?

2. Read the text and decide which of the following statements are true, false or not given:

a) Innovation can mean different things in different contexts.
b) Innovation involves creativity, new ideas and new ways of thinking.
c) Anyone can be innovative.
d) Innovation doesn't involve creativity but design does.
e) Innovation requires the application, implementation and exploitation of new ideas to deliver an intended result.

INNOVATION: THE KEY TO BUSINESS SUCCESS

Innovation and being innovative are terms which are used widely. It means different things to different people. And it can be used to describe something simply different. Oh, well, that's an innovative way to wear a scarf. Or, the idea of a party that's on a remote island is very innovative.

Innovation in terms of business is different.

The Oxford English Dictionary defines innovation as the action or process of innovating, or a new method, idea, or product, et cetera. Innovation

overlaps with design and creativity. And it's worth exploring these terms to see where they overlap and where they are distinctive.

Creativity is about being open-minded, involving personal expression. It's unplanned. There's no right or wrong answer. It makes you automatically think of maybe artworks, paintings, sculpture, or craft.

Creativity in a business context is slightly different and is concerned with thinking of novel and perhaps appropriate ideas. We can refer to some employees in the business environment as creatives, for example in advertising, promotion, or marketing.

The design process is about constraining that creative spark, putting engineering, sociological, and economic constraints on that design and seeing how you could manufacture something or create that into a tangible entity.

Let us now focus on innovation. If innovation is the process of creating something new in the context of known constraints, then is it not virtually the same as design? Yes and no. Design, certainly design thinking and innovation, are very closely linked.

But there is one specific difference when applied in a business context. Both designing and creativity do have outcomes. Designing even has focused outcomes on requirements, preferred outcomes, but not specifically outcomes a business can reap financial gain from. Innovation then involves the creation of new ideas certainly. But specifically it requires the application, implementation, and exploitation of those new ideas, designs, technology to deliver an intended business result, new customers, new markets, bigger margins, competitive advantage.

Thus a concise view of what innovation means to the firm is the achievement of a higher degree of return on investment. It's about exploiting an observed gap in the market through the development of a new product or service that fulfils that gap.

To summarise, design, creativity, and innovation are all closely linked, with shared values, skill sets, processes, sometimes outcomes. Innovation is an intellectual endeavour requiring a mix of business acumen, creative behaviour, and designerly operating. It is harnessing these shared skill sets, values, and processes which will allow a business to capitalise on their ideas and link them to user needs and business opportunities. Innovation results in the commercial exploitation of ideas in the form of new products, services, or processes.

3. Find the words in the text that mean the same as:

a) cover part of the same area of interest, responsibility, etc. (paragraph 3)

_____

b) interestingly new or unusual (paragraph 5)

_____

c) a limitation or restriction (paragraph 6)

_____

d) the way a thing turns out; a consequence (paragraph 8)

_____

e) earnest, prolonged, and industrious effort; an enterprise or undertaking (paragraph 10)

_____

f) take the chance to gain advantage from something (paragraph 10)

_____

Now use these words to fill in the gaps in the sentences below.

1. The only way to foster that knowledge is to participate in the research _____.
2. Although the three conceptions _____ to some extent, they involve important differences of emphasis.
3. We did not examine drug effects on intermediate _____ such as allergy.
4. On a very practical level, the biochemistry suggests some entirely _____ approaches to treatment.
5. His new book _____ on the advantages - and suffers from the defects - of his previous effort.
6. Resistance from the medical community has been one important _____.

4. Match the words from the left with the words from the right to make word combinations from the text:

fulfil	a gap
return	spark
competitive	gain
business	advantage
creative	on investment
financial	result

5. You are going to read about the innovative uses of biomass to produce energy. With a partner, discuss the following:

a) What are the main biomass resources that are used to produce energy?
b) How is bioenergy different from energy from traditional sources?

Read the article quickly and check the answers to these questions.

6. Read the article again and fill the gaps with these extracts.

a) These are known as combined heat and power facilities.
b) Not only do these systems provide renewable energy, they also help farmers and ranchers meet environmental regulations.
c) when biomass is heated in the absence of oxygen.
d) The use of biomass energy has the potential to greatly reduce our greenhouse gas emissions.
e) which is very much like a jet engine, only it turns an electric generator instead of propelling a jet.

Bioenergy: Refueling the Future

We have used biomass energy or bioenergy - the energy from organic matter - for thousands of years, ever since people started burning wood to cook food or to keep warm.

And today, wood is still our largest biomass energy resource. But many other sources of biomass can now be used, including plants, residues from agriculture or forestry, and the organic component of municipal and industrial wastes. Even the fumes from landfills can be used as a biomass energy source.

1) _____Biomass generates about the same amount of carbon dioxide as fossil fuels, but every time a new plant grows, carbon dioxide is actually removed from the atmosphere. The net emission of carbon dioxide will be zero as long as plants continue to be replenished for biomass energy purposes. These energy crops, such as fast-growing trees and grasses, are called biomass feedstocks.

Nowadays, biomass can be converted into liquid fuels for transportation, into chemicals for making products that typically are made from petroleum, or it can be used to generate electricity (biopower).

Most of the biopower plants in the world burn bioenergy feedstocks directly to produce steam. This is called a direct-fired system. The steam is usually captured by a turbine, and a generator then converts it into electricity. In some industries, the steam from the power plant is also used for manufacturing

processes or to heat buildings. 2) _____ For instance, wood waste is often used to produce both electricity and steam at paper mills.

Many coal-fired power plants can use cofiring systems to significantly reduce emissions, especially sulfur dioxide emissions. Cofiring involves using bioenergy feedstocks as a supplementary energy source in high efficiency boilers.

Gasification systems use high temperatures and an oxygen-starved environment to convert biomass into a gas (a mixture of hydrogen, carbon monoxide, and methane). The gas fuels what's called a gas turbine, 3) _____

The decay of biomass produces a gas - methane - that can be used as an energy source. In landfills, wells can be drilled to release the methane from the decaying organic matter. Then pipes from each well carry the gas to a central point where it is filtered and cleaned before burning. Methane also can be produced from biomass through a process called anaerobic digestion. It involves using bacteria to decompose organic matter in the absence of oxygen.

Methane can be used as an energy source in many ways. Most facilities burn it in a boiler to produce steam for electricity generation or for industrial processes. Two new ways include the use of microturbines and fuel cells. Microturbines have outputs of 25 to 500 kilowatts. About the size of a refrigerator, they can be used where there are space limitations for power production. Methane can also be used as the "fuel" in a fuel cell. Fuel cells work much like batteries but never need recharging, producing electricity as long as there's fuel.

In addition to gas, liquid fuels can be produced from biomass through a process called pyrolysis. Pyrolysis occurs 4) _____ The biomass then turns into a liquid called pyrolysis oil, which can be burned like petroleum to generate electricity. A biopower system that uses pyrolysis oil is being commercialized.

Several biopower technologies can be used in small, modular systems. A small, modular system generates electricity at a capacity of 5 megawatts or less. This system is designed for use at the small town level or even at the consumer level. For example, some farmers use the waste from their livestock to provide their farms with electricity. 5) _____

Small, modular systems also have potential as distributed energy resources – a variety of small, modular power-generating technologies that can be combined to improve the operation of the electricity delivery system.

UNIT 3 SCIENTIFIC COMMUNICATION

3A. Research Conference

1. In small groups, talk about these questions:

Why is it important for scientists to keep in touch with:
a) other people in their field (e.g. biotechnology)?
b) people in their specialism (e.g. industrial biotechnology)?
c) people in other fields of science?

2. Read and translate the text then, in pairs, answer the question:

Why is it important for you to participate in scientific conferences?

WHY IT'S IMPORTANT TO PRESENT YOUR DATA AT SCIENTIFIC CONFERENCES

We are often encouraged to present our research findings at regional and national conventions; however, the value of these presentations is not always

explicitly clear. Listed below are the top 5 reasons why it is important for you to participate in conferences.

1. Contribute to and learn about the most recent advances in your field. Conference presentations allow you to present your data during many stages of development. This will allow you to present your most up-to-date findings and receive feedback from colleagues, which will help you when you ultimately write up your study.

2. Advocate for your science. Perhaps one of the most important benefits from conference presentations is the ability to advocate for your science. Representing your field of interest allows researchers in other disciplines, policy-makers, and the public to become aware of the innovative research being generated in your particular subfield.

3. Learn how to talk about your data. Conferences provide a way to practice your presentation skills and can help you develop the expertise needed to discuss your research in a clear and meaningful way. Learning how to answer specific questions and present your data to a range of individuals will help you in other endeavors.

4. Contribute to your overall research profile. When on the job market, graduate students often compete against other students for ideal jobs or post-doctoral positions. A history of conference presentations will show potential employers that you regularly disseminate your research finding to colleagues as well as keep up-to-date on the cutting-edge research of the field.

5. Meet other researchers in your field and potential contacts for future positions. The presentations that you give and attend are likely to be frequented by researchers with similar interests, giving you the opportunity to discuss your research and learn valuable information from people working with similar techniques, populations, or statistics. Establishing contacts with other scientists will foster friendships with motivated researchers who can be resources for you at any stage of your career.

In short, attending and presenting at conferences offers a myriad of opportunities to a young researcher.

3. Look at the online poster advertising a conference and answer the following questions:

1. Who might be interested in attending this conference?
2. If a researcher applies on 7 May, could he/she give a paper at this conference?
3. If you were interested in this conference, how could you find out more?

Keynote speakers

• Zoltan Szabo

European Institute of Malaria Research (EIMR)

• Miremba Kabasomi

Makarere University, Kampala, Uganda

Preliminary Programme

A list of other invited speakers and preliminary session topics is currently being developed by the Conference Chair and will be announced in due course. Please check back for updates.

For further information about us see www.eimr.org

Online registration only

www.eimr.org/con7/registration

Registration is on a strictly first- come, first-served basis.

Application deadlines

1 April for abstract or poster presentation submissions

7 May for attendees

Registration fees

Academia – €450, Students – €350, Commercial/Industry – €650

4. Complete the following words and phrases from the poster using the words in the box.

basis course deadline keynote preliminary presentation registration (x2) strictly submit updates

1. application _____	6. _____ programme
2. on a _____ first-come, first-served_____	7. _____ fees
3. _____ speakers	8. to _____ an abstract
4. online _____only	9. in due _____
5. poster_____	10. check back for _____

5. Match the words and phrases (1 – 10) in Exercise 4 to the definitions (a – j).

a. research summarised in a visual display

b. an early plan for the conference (some details may change later)
c. look for further information
d. money you must pay to attend the conference
e. soon
f. the Internet must be used to send personal information for the conference
g. the last date that personal information can be sent to the conference organizers
h. the most important presenters at the conference
i. the organizers will only accept applications in the order they receive them
j. to send a written summary of your research because you want to present a paper

6. Look at the list of typical conference activities (a-h) below and then discuss the following questions.
1. Which of these activities have you done (or might you expect to do) at conferences?
2. Which activities are easier / more difficult for you? Why?
3. Do you know any words or phrases which are appropriate for these activities?

a. making arrangements for coffee, lunch or an evening out
b. asking someone which talks they have been to
c. asking someone for their opinion on a talk
d. finding out about where someone works and what research they are doing
e. asking someone if they are giving a talk
f. asking someone how successful their presentation was
g. introducing yourself or someone else for the first time
h. networking (making useful contacts)

7. Have you ever taken part in a meeting in English? If so, who was the meeting with and how was it? What might be difficult about having a meeting in English, apart from the language difficulties you might have? Listen to four scientists talking and take notes about problems they have had in meetings in English (Recording 3.1).

1 Sahal:_____
2 Hitomi:_____
3 Sam:_____
4 Radek:_____

Have you ever had a problem like those described by the speakers?

8. Milan is socializing at the 7th European Malaria Conference in Cambridge. Listen to extracts from eight different conversations Milan

has (Recording 3.2). For each conversation, say which activity in Exercise 7 you hear. Sometimes, more than one correct answer is possible.

Conversation 1:_____ Conversation 5:_____
Conversation 2:_____ Conversation 6:_____
Conversation 3:_____ Conversation 7:_____
Conversation 4:_____ Conversation 8:_____

9. Look at the sentences from the conversations in Exercise 8c. Complete the spaces with the words in the box. Then listen and check your answers (Recording 3.2).

about based face forward giving go honest how looking sessions this turnout

Conversation 1
(1) _____ was it?
Well, to be (2)_____it was a bit too clinical for me.
Conversation 2
And (3) _____ is Freja Pedersen.
Conversation 3
So where are you (4) _____, Freja?
What are you (5)_____at?
Conversation 4
So are you (6)_____a paper here, Makareta?
Conversation 5
Well, how (7)_____you come out with us tonight?
Conversation 6
So, how did the talk (8)_____?
Did you get a good (9)_____?
Conversation 7
So which other (10)_____have you been to today, Milan?
Conversation 8
It's good to finally meet you, Jacob, and put a (11)_____to the name. This might seem a little (12)_____, but I wondered what opportunities there were in your lab for post-doctoral positions.

10. In pairs, decide whether you think the following statements are true (T) or false (F) for you.

1. University students and junior researchers should not ask questions to professors or more senior researchers in your field.
2. A speaker does not have to answer every question he/she is asked.
3. We usually use more informal language during the question-and-answer session of a poster presentation.
4. We usually use more informal language in the question-and-answer session following the presentation of research.

11. Read the phrases and decide what the function for each one might be. Try to identify six different functions (there should be two phrases for each one).

Functions

a) giving an opportunity to ask questions
b) checking that you understood the question
c) checking that you have answered the question
d) acknowledging a person's question
e) clarifying something you have said
f) showing that you are unable to answer a question

1. Put another way, this means that we may have a real result.
2. If there are any questions, I would be pleased to answer them.
3. Hi! Did you have any questions for me?
4. I hope that answers your question.
5. Does that answer your question?
6. Perhaps I should rephrase that.
7. Sorry, was your question about the method we used?
8. That's an interesting question.
9. I'm glad you asked me that.
10. Sorry, are you asking about what method we used?
11. Sorry, I'm not the best person to answer that.
12. I'm afraid the research didn't look into that.

12. Work in pairs. Practice saying the phrases.

3B. Presentation at a Research Conference

1. Read and translate the text.

THE PRESENTATION JOURNEY

Giving a presentation is like taking your audience from start to finish on a journey. At the start, your audience require some basic information before they can accompany you on this journey. Once they have the information, they're on your side, attentive and ready to listen to every step of the journey along to your final message.

Who. Introduce yourself. Clearly, the amount of information you give about yourself and your work and the level of formality you use, depends on the presentation you're giving. For example, for a presentation to a group of your colleagues, you probably don't need to give your name and background and you can use informal language.

Why. Tell your audience your destination - the reason they're there to listen to you and the purpose of your presentation. If the audience don't know why they should listen, they won't have any reason to accompany you along your journey. The 'why' is linked to the conclusion, your final message - probably, the most important part of your presentation.

What. Outline the roadmap - the main points that you're going to develop and the order in which you would like to develop these. When your audience

have a clear view of the roadmap you want to navigate, they can follow you more easily and can also see you're planned, prepared and effectively managing the presentation. There are good reasons for giving the roadmaps, as research shows your audience listen better and remember better and more when they know the structure and shape of your presentation. The technique we use to give the roadmap is called 'sequencing'. This is a very simple technique as it just involves using language such as one, two, three or firstly, secondly, thirdly.

How. Put yourself into your audience's shoes: address your audience's needs. Your audience won't listen to you as you go into the main part of your presentation if they have other concerns.

Your 'start' should include these points but at the same time not be too long. Ninety seconds is a good guideline as there's evidence that you begin to lose listeners after this amount of time. Your audience tend to listen to your every word and form an impression of you in these ninety seconds. An accurate 'start' helps to create a good impression and you should aim to be grammatically accurate at this stage

2. Write 'who', 'why', 'what' or 'how' next to each phrase. Check any vocabulary you don't know.

1. On behalf of Mr Keane, may I welcome you to Jackson Inc. My name's Jo Black and I'm responsible for ...
2. My purpose today is to ...
3. I'm going to develop three main points. First, ... Second, ... Third, ...
4. Let me introduce myself. I am ... I am a ...
5. I'll pass round copies of my slides so you can make notes as I go through the presentation.
6. Before I continue, let me tell you something about myself.
7. Today 1 would like to give you a general overview of...
8. I've divided my presentation into three main points. I would like to begin with ...
9. So, I'll be addressing three main points and the first one is going to be ... The second point will be ... And finally the last point is ...
10. I'm going to outline three proposals. Firstly, I'll ... Then, I'd like to ... and finally ...
11. We can take two or three questions at the end of each point.
12. You don't need to take notes as we'll be handing out presentation booklets.

3. All the phrases in italics below are appropriate when giving a formal talk on your research. Read extracts 1 – 8. Then listen and underline the phrase Milan uses in each one (Recording 3.3).

1. *Good afternoon, everybody.* / *Welcome, ladies and gentlemen*.
2. To start, *thank you / I'd like to start by thanking you* all for coming to my

talk today.
3. *I'm Milan Poborski and at present / My name is Milan Poborski and* I'm a PhD candidate at Northumbria University.
4. *I'm going to talk today / My talk today is* about my recent research investigating ...
5. *I'll begin by explaining / To start with, I'll explain* briefly how T-cell responses…
6. *After that, I'll / I'll go on to* describe the alternative method I have been investigating ...
7. *Finally, I will discuss I I'll conclude by discussing* why this method could be useful as a way ...
8. I plan to talk for about 40 minutes, leaving plenty of time for /1 will talk for about 40 minutes and then I'll answer any questions at the end of my talk.

4. Match each pair of phrases (1 – 8) from Exercise 3 to their correct function (a – f) below. Note that one of the functions may be expressed with three different pairs of phrases.

a. Give instructions for asking questions b. Greet the audience.
c. Introduce the topic of the presentation d. Introduce yourself
e. Outline the structure of the presentation. f. Thank the audience for coming.

5. Think of a piece of research you have done recently. Use the words and phrases in Exercise 3 to help you plan the introduction to a presentation about your research.

6. Below are five extracts from the main part of Milan's presentation. Match the beginnings (1 – 5) to the endings (a – e).

1. A number of potential vaccine types have been developed and	a. counting IFN-γ secreting cells has been the preferred method to date.
2. As I have already said,	b. using flow cytometry to detect MIG secretion gives us a more accurate way of measuring immune responses.
3. As you can see from this image,	c. I will be returning to those shortly.
4. Let's begin by looking at the size of the malaria problem.	d. Malaria kills over one million people every year in 109 countries.
5. That's all I have to say about the vaccine itself,	e. so now I'd like to move on to looking at judging the response of the immune system to the vaccine.

7. The underlined phrases in Exercise 6 help speakers to organise their presentation clearly and guide listeners through the information. Write the correct underlined phrase to complete the advice below.

Use:

a. _____ : to introduce a new part of the talk
b. _____ : to conclude one part of the talk and then begin another
c. _____ : to refer back to an earlier part of the talk
d. _____ : to refer forward to a later part of the talk
e. _____ : to refer to a visual aid

8. Read the text below. Why are signposts important?

HOW DO SIGNPOSTS WORK?

Signposting helps you structure and shape the main content of your presentation. Signposts create 'verbal paragraphs' or 'verbal signals' and raise the attention curve at the beginning and end of each point of your presentation. The technique allows you to guide the audience through the structure of your presentation linking one point to the next. The audience can't see your notes and can't look forward to see what is coming. You know where you're going on your journey and you need to guide your audience by telling them exactly where you are on the roadmap of your presentation. This is a simple but highly effective technique that adds clarity to your presentations.

9. Phrases 1 – 22 below are examples of signposts. Read them and check any vocabulary you don't know.

1 Moving on now to ...
2 I would like to begin by ...
3 Let's now turn to ...
4 Let's start with my presentation.
5 So, first of all ...
6 Now, turning to ...
7 Now, what about... ?
8 Let me move on to ...
9 So, that's the general picture for ...
10 So, we've looked at ...
11 That completes my overview of
12 Let's just recap ...
13 So, that's pretty much ...
14 And finally ...
15 Next we come to ...
16 So, that was ...
17 My next point is ...
18 That's all I want to say about ...

10. Milan has come to the end of his presentation. In pairs, look at the list (a – e) and decide on the best order for him to do these things. Then listen and check your answers (Recording 3.4).

a. ☐ let the audience know his presentation has finished

b. ☐ offer the audience the chance to ask questions about his presentation

c. ☐ reach a conclusion based on his research

d. ☐ summarise the main points of his talk

e. ☐ thank the audience for listening to him

11. Listen to the end of the presentation again (Recording 3.4) and complete the following phrases using between one and three words in each space.

1. _____ recap what I've said.
2. I therefore _____ that...
3. That _____to the end of my talk today.
4. I would like to thank you for _____ attentive audience.
5. I would be happy to _____ you may have.

12. Read the text about the 'finish' of a presentation and answer the questions below.

MAKE YOUR FINAL MESSAGE CLEAR

Stay in control until the very last second and follow these steps at the 'finish' of your presentation.

Firstly, pause briefly and **signal** clearly that you are now ready to finish the presentation. The audience will start to listen again closely at this point.

Then, make your **summary,** giving a brief overview of what has already been said. The summary is a reflection of your 'what' and looks back. It should not be too long as you will lose your audience's attention again, but detailed enough to cover your points. This can be a difficult balance to achieve!

A good summary gives your listeners time to reflect on the content and builds up to your conclusion, making your conclusion stronger, more powerful and more effective. A conclusion without a summary can sound incomplete as your audience may not have listened to every point during the main part of the presentation and the purpose can be lost. Avoid giving any conclusions while you are making your summary.

After this, give your **conclusion.** This is a reflection of your 'why' and looks forward to what you want people to do or think after your presentation. It should follow logically from your summary. There are different kinds of conclusions:

you can make a call for action, make a recommendation or assure your audience that they're better informed. This is the destination of your journey and the most important part of your presentation.

Finally, make your **closing remarks** by thanking your audience, asking for questions or passing round your presentation handouts.

In your opinion, why don't some people finish their presentations effectively?
Do you agree that every presentation has some kind of conclusion?

13. Make a presentation of your current research.

3C. Research Article

1. Read the text and answer the questions:

1. What preliminary sections do the research papers include?
2. How many major sections do the research papers contain?
3. How are these sections headed?
4. What do you think which of the sections contain figures?
5. What do you think which section is the most detailed? Why?

AN EXPERIMENTAL RESEARCH PAPER

An experimental research paper is a paper written by a scientist to present the objectives, methods, results, and conclusions of the study he/she has performed. The paper is usually published in a professional scientific journal and often needs to be peer reviewed. It has much in common with other types of scientific writing, such as a monograph, a thesis or dissertation.

The term "experimental research" used here is referred to any kind of study in which a scientist states a problem, moves a hypothesis as a possible way to solve the problem, collects, processes and interprets research data which will either support or reject the hypothesis.

A paper which describes experimental research differs from a review paper in one major way: it is not limited to the description of the state of knowledge in a given topic area; here the author is expected to create an entirely new work based on his own experimental findings, their interpretation and evaluation.

The organizational format for all experimental research papers is generally the same, regardless of the field of study in which the scientist is working. A typical experimental research paper contains the following sections in the order they are listed:

• Preliminary sections:
Title
Abstract
Keywords
Nomenclature
• Major sections:
Introduction
Methods and Materials
Results and Discussion
Conclusion
• Supporting sections:
Acknowledgements
References
Appendices

2. Read the information about the titles of research article and do the following tasks:

A title of the paper is a brief statement of the problem being investigated. It contains the key words or concepts underlying the research.

The title helps the reader decide whether the paper satisfies his/ her scientific needs and is worth reading. Therefore, it should be clear, concise and representative of the contribution (a new method, mechanism, process, algorithm, etc.) the researcher has made.

The title is composed of two parts: contribution and background. Remember that contribution (what is new) comes at the beginning of the title and the known, less specific information appears at the end.

The translation of titles from Russian into English often results in abundant use of the preposition *of*. E.g.: *методы измерения размера частиц (*techniques of measurement of the size of particles).*

There are three ways to overcome this shortcoming:

1. Use of modified nouns. *E.g.:*

deposition of chemical vapour **vs**. chemical vapour deposition

techniques of measurement of the size of particles **vs.** particle size measuring techniques

2. Use of gerundive and infinitive verbal forms. *E.g.:*

Assessing the potential of a fine powder to segregate using laser diffraction.

3. Replacement of the preposition *of*, where possible, by another, more specific preposition. *E.g.:*

Studies on potential applications of biomass for the separation of heavy metals from water and wastewater.

a) Translate the following modified nouns into Russian:

particle reflection coefficient
particle size analysis
amplitude balance equation
fluid flow equation
surface modification method

b) What do we call these things, people and processes? Use the structure noun + noun. *E.g.: an engineer specializing in hardware design is a hardware design engineer.*

somebody whose job is to inspect safety is …… .
the process of describing environment is …… .
equipment used for gas processing purposes is ……. .
detection of molecules on the surface is ……..
extraction by acid at room temperature is ……

c) Using noun + noun structures, translate the following Russian word combinations into English.

алгоритм обработки данных
технология массового производства
уравнение теплового баланса
система регулирования давления
план оптимального поиска

d) In the word combinations below replace abstract nouns by gerund form. (*Remember that Gerund is not used with an article, has no plural form and cannot take an object with the preposition of!)* *E.g.*: visualization of brain activity **vs**. visualizing brain activity

measurements of gas porosity
estimation of biomass growth velocity
protection of the greenback
treatment of diabetes with transplanted cells
evaluation of three-dimensional particle shape

e) In the word combinations below replace nouns by Infinitive form.

an approach to the simulation of the nervous system
models of description of the two-dimensional properties of solid surfaces
technology of increasing labour efficiency
an integrated framework of evaluation of water allocation strategies
new methods and models of improving understanding of processes

f) In the titles below replace the preposition of marked with * by another, more specific preposition.

research *of herbs and their effects
advanced system *of data analysis

technology *of producing metal-oxide-semiconductors
theoretical and descriptive research *of such phenomena
study *of changes in water situation

3. Tony is doing research into the panspermia hypothesis as part of a Master's degree in astrobiology. He has been investigating whether it is possible for bacteria and microorganisms to survive in an environment as harsh as the surface of Mars. He has been advised to organise the text of his introduction around five key questions. Match the beginnings to the endings of the questions.

1. What was I	a. approach the problem?
2. Why was it	b. expect to know after doing the research?
3. What was already	c. important?
4. What did I	d. investigating?
5. How did I	e. known about the subject of my research?

4. Read five extracts from the introduction to Tony's paper, ignoring the highlighted words for now. Which question from Exercise 3 is each extract answering? Write the questions above the extracts.

1. Such an extreme environment was thought to be uninhabitable, but microbial ecology studies reported the presence of microorganisms (Amaral-Zettler et al., 2002). Could the surface composition of Mars protect life against radiation?
2. A number of studies have investigated different extreme Martian surface conditions on terrestrial microorganisms. Nicholson and Schuerger (2005) reported that die spores of Bacillus subtilis were able to survive for 19 days under Mars atmospheric pressure and composition. Saffary et al. (2002), however, found that survival decreased due to ...

3. Potential habitability in the subsurface would increase if the overlaying material did play a protective role.

4. For many years now, scientists have speculated about the possibility of life on Mars (Klein et al., 1976; McKay, 1997). The discovery of liquid water on Mars would increase its habitability ...

5. We report here on our studies of protection by Rio Tinto Basin iron oxides and hydroxides on two microorganisms, AcidithiobaciUiis ferrooxidans and Deinococcus radiodurans, under simulated Mars surface conditions.

5. A well-written introduction usually presents general information about the topic first before specific information about the research. What do you think is the best order for the extracts in Exercise 4? Answer the following questions about the extracts in Exercise 4.

1. Write down the highlighted words and phrases which describe:
    a. a hypothesis / hypothetical situation
    b. current research or knowledge on a particular topic
    c. general statements about past research
    d. the results or conclusions taken from specific past research
2. What form or tense are the words and phrases in a-d above?

6. Read an extract from the introduction of a paper about the ability of lichens and microbes to survive in deep space. How many of the questions in Exercise 3 can you answer?

Recent advances in space technology (1)_____(provide) the possibility of studying the survival of different microorganisms in the harsh environment of space *(Demets* et al., *2005; Baglioni* et al., 2007*)*. So far, lichens (2) _____(be) the only organisms able to survive exposure to such extreme conditions *(Sancho* et al., *2007; de los Rios* et al., *2010).*

It is believed that, if sufficiently protected by meteorite-like material, microorganisms may also survive the journey through space. However, Brandstatter *et al*. (2008) (3) _____ (report) that microorganisms embedded in 2 cm thick rocks on the outer surface of a re-entry capsule, simulating the entry of a meteorite, (4)_____ (not survive).

The aim of this work (5)_____(be) to obtain further information on the resistance of rock-colonising microbial communities and lichens to outer space conditions, during the Biopan-6 flight of ESA on board a Russian Foton satellite.

7. Complete the following summary on variables using the words in the box.

affects	**collecting**	**controlled**	**data**	**dependent**	**independent**

How much a variable (1)_____a relationship can be discovered by (2)_____experimental (3)_____on changes to the relationship as the variable is changed. In an experiment, there will be: one (4)_____variable – this is the feature you are measuring; one or more (5)_____variables – these are the variables which you change; one or more (6)_____variables – these are not being tested and so they stay the same.

8. What meaning do the following suffixes add to the words which mean instruments? Match the suffixes with their meaning.

1) - graph (*E.g.*: seismograph) 2) - meter (*E.g.*: spectrometer) 3) - scope (*E.g.*: oscilloscope)	a) shows that the instrument writes, draws or records b) shows that the instrument measures a unit of something c) shows that the instrument is used to see something

9. Complete the table below using the extract from the following research paper to help you.

A promising candidate among the different adsorbent materials are activated carbons. Through activation, highly porous materials can be prepared. Due to their high porosity, activated carbon materials are able to adsorb large amounts of hydrogen. Following adsorption, hydrogen molecules can be found at two possible locations: (1) on the surface of the adsorbent, or (2) as a compressed gas in the void space between adsorbent particles. (adapted from *Konowsky et al.* 2009)

noun	**verb**	**adjective**
compression	compress	
	adsorb	
	activate	
		porous

10. The gapped words below all describe physical or chemical properties of substances. The meaning of each word is given on the right. Complete the words with the correct vowels (a, e, i, o, u)

1. br_ttl_n_ss — how easily something can be broken
2. c_p_c_t_nc_ — how well something holds an electrical charge
3. c_nc_ntr_t n — how much of one substance is found in another

4. c_nd_ct_v_ty	how well something allows heat or electricity to go
5. d_ns_ty	how much mass a given volume of a substance has
6. fl_mm_b_l_ty	how easily something burns
7. l_m_n_nc_	how much light passes through or comes from a substance
8. m_ss	how much matter is in a solid object or in any volume of
9. p_rm__b_l_ty	how easily gases or liquids go through a substance
10. p_r_s_ty	how many small holes are in a substance
11. pr_ss_r_	how much force a liquid or gas produces when it presses
12. r__ct_v_ty	how easily a chemical substance reacts
13. s_l_b_l_ty	how easily something can be dissolved to form a solution
14. v_l_c_ty	how quickly an object is travelling
15. v_sc_s_ty	how thick a liquid is
16. v_l_m_	how much space is contained within an object or solid

11. Complete the sentences by choosing the correct preposition (a, b or c).

1. First, leucine was separated_____other amino acids in the protein hydrolysate.

a. for b. from c. with

2. Many bacteria, such as *Bacillus* spp., can be isolated _____insects.

a. from b. to c. with

3. Subsequently, the specimens were embedded _____ methylmethacrylate.

a. at b. in c. to

The sections were stained_____uranylacetate and lead citrate solutions.

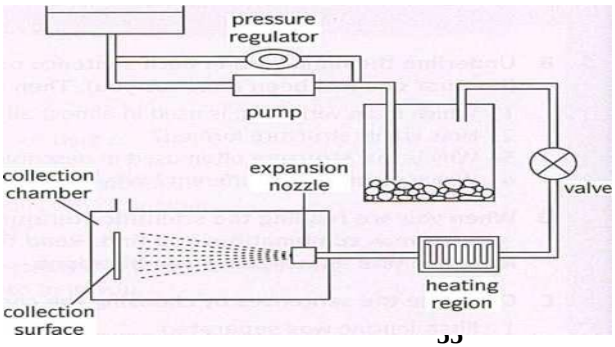
a. with b. to c. under

4. MIP-1 β was added to wells which had been coated _____ BSA.

a. by b. from c. with

5. pH is maintained ____6.5, using Waterlife Buffer and Sera pH Minus.

a. at b. in c. to



12. Look at the diagram from a review of supercritical fluid technology. Complete the description of the process using the words in the box.

at	first	then
was	which [x2]	

The diagram provides a schematic view of the rapid expansion of supercritical solutions (RESS) process. (1)_____, the supercritical fluid (SF) (2) _____ pumped into the vessel (3)_____ contained the solid solute. The SF dissolved and became saturated with the solute. The resultant solution was (4)_____ introduced into a precipitation chamber by expansion through a laser-drilled nozzle. The precipitation unit was maintained (5) _____conditions where the solute had low solubility in the SF. As the SF expanded, its solubility decreased, (6) _____ resulted in a high degree of solute supersaturation and subsequent precipitation.

13. Complete the results sections of different research papers using the words and phrases in the box.

analytical tool	In future	predict	an attempt

Conclusion 1

The grouping of chondrocyte receptors (The grouping of chondrocyte receptors) described in this paper is _____to make a new step in understanding their role in mediated processes due to natural remodeling and reparative regeneration of articular cartilage. _____it is planned to use this grouping to create a mathematical model, which will more accurately _____the development of various processes in the cartilaginous tissue under the action of different signal molecules. This grouping gives an _____ in molecular biology, biotechnology, and regenerative biomedicine.

can be tested	properties	correspond to	components

Conclusion 2

The resulting product has composition with basic _____ of a lubricating composite. The main _____ of SCSP are surfactant-associated proteins and phospholipids. Physical and chemical properties _____ the characteristics of natural lubricant – the synovial fluid of articular cartilage. Therefore, this product _____ as a potential component of synovial fluid prosthetic and other biomedical products.

was shown	demonstrates	demonstrate	is applicable	can be used

Conclusion 3

This study _____ the presence of lateral heat transfer from one part of the breast to other ones and the ability to determine its most probable vectors in the real bodies of healthy women and cases with presence of malignant neoplasms. It _____ the identification and calculation of such heat flow vectors had independent diagnostic potential. The algorithm of calculations for tissue with pathological focus, with minor modifications, _____ for analyzing heat transfer in tissue containing TEC. Calculations of heat transfer for such systems in different periods after the TEC installation _____ the presence of a lateral heat transfer, and as scaffold remodeling in the host tissue the direction of heat transfer changes from a predominantly centrifugal to centripetal. This transition is well marked and _____ for non-invasive monitoring of adaptation in the postimplantation period.

UNIT 4 STUDYING FOR AN ENGINEERING DEGREE

4A. University Programmes and Courses

1. Work with a partner to discuss the following questions about education in your country. Pay attention to the underlined words.

1. What age do children usually leave secondary school?
2. Do most people go on to higher education? Why/Why not? Do they have to pay?
3. What are the admission requirements to colleges and universities?
4. What degree programmes are the most popular?

2. Read the text.

TUM AT A GLANCE

Technical University of Munich (TUM) is one of Europe's top universities. It is committed to excellence in research and teaching, interdisciplinary education and the active promotion of promising young scientists. The university also forges strong links with companies and scientific institutions across the world. TUM was one of the first universities in Germany to be named a University of Excellence. In the international Shanghai Ranking, TUM was rated the number one German technical university in 2016.

Ever since its foundation in 1868, Technical University of Munich (TUM) has been at the forefront of innovation. TUM scientists today have the same goal as their 19th century counterparts: finding solutions to the major challenges facing society as we move forward. TUM was founded to provide the state of

Bavaria with a center of learning dedicated to the natural sciences. It has played a vital role in Europe's technological advancement and has the prestige of producing a number of Nobel Prize winners.

TUM is clearly structured. It is divided into 13 academic departments, and also has four Integrative Research Centers engaged in cutting-edge interdisciplinary research. The Board of Management oversees the running of the university, supported in this function by the Supervisory Board. It continually monitors the university's development, elects the president and the members of the Board of Management and decides upon the long-term strategy of the TUM.

Thirteen faculties form the academic basis of TUM. They represent a portfolio of subjects focusing on natural sciences, engineering sciences, life and food sciences and medicine that is virtually unrivaled. Technology-oriented business management and the TUM School of Education complete these focus areas. TUM's faculties welcome over 31,000 students, one third of them women. 689 Professors are engaged in research and teaching at TUM. 305 academic chairs exist at the university. The university has a budget of EUR 1.05 billion, which includes the university hospital.

Around 17% of TUM's students come from abroad. As TUM is in a dynamic process of internationalisation, it offers several study programs in English. These courses are on the one hand designed to attract foreign students. On the other hand they aim at Germans interested in studying with an international dimension. At TUM you have the possibility to choose between full international Bachelor's, Master's and PhD courses and short-term programs, especially the summer and winter universities. At the moment, there are more than 30 English-speaking Master's degrees and PhD programme at TUM. Besides, there are about 23 Master's degree and 6 Bachelor's degree courses of studies where a part of the courses are conducted in English (dependent on the professor or lecturer). Proof of both German and English language proficiencies are necessary in some of these courses of studies. 8 TUM faculties offer a range of 42 double degree programs. These programs offer qualified students the possibility to obtain both the German Master's and its corresponding foreign degree.

TUM has three major locations in Bavaria: Munich • Garching • Freising-Weihenstephan. TUM also has an international footprint – with campuses and offices on three continents.

3. Use information from the text to fill in the missing facts about TUM. Find out and fill in the information about your University. Compare the facts and figures.

	TUM	Your University
1. Established		
2. Locations		
3. Ranking		
4. Number of faculties		
5. Number of departments/ chairs		
6. Number of employees		
7. Number of students: Undergraduate Research		
8. Percentage of international students		
9. Number of degree programmes		
10. Languages of instruction		

4. Look at this extract from a UK university's web pages.

MSc/MEng in Chemical Engineering

***Qualification:** Master of Science (MSc) or Master of Engineering (MEng).

***MSc course** is 150-credit course, consisting of core and elective modules plus a 60-credit project module. Students in the MSc programme complete a two semester independent project working closely with a research group in the Department. These projects are designed to provide students with exposure to a one of the sub-disciplines of Chemical Engineering that is a strength of the department. Students are required to prepare a final report of the project work to develop written communication skills. The MSc provides depth and specialisation though an independent project.

***Master of Engineering (MEng)** is a 90-credit course work degree that is designed to be completed in two academic semesters. The MEng allows for breadth through additional courses taken. The goal of the program is to produce skilled engineers who will have a deeper understanding of the fundamentals of chemical engineering, as well as a broader set of professional skills and exposure to other technical disciplines. Students may elect to do an independent project (and submit a satisfactory written report) and/or other advanced technical electives with approval of Academic Advisor to complete the 90 credit minimum requirement.

***Course description:** The courses cover all the major aspects of chemical engineering. Topics include numerical methods for solving engineering problems, computational fluid mechanics and transport, process simulation, and optimization (for a full list, see the list of modules). The programmes in Chemical Engineering take advantage of the cutting-edge research and technology at our university through project work and postgraduate-level courses. The core curriculum provides students with skills and technical depth relevant for a variety of careers. The modules consist of a mixture of lectures, seminars, workshops and laboratory work.

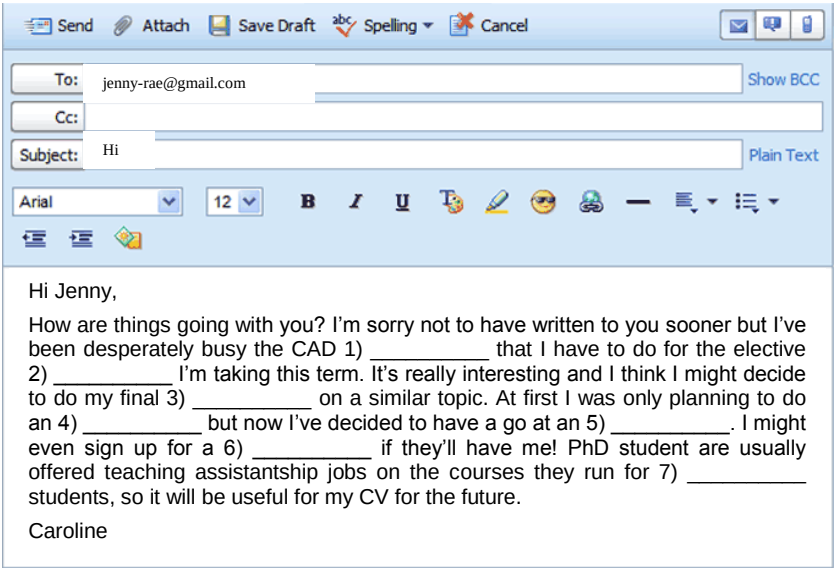
***Assessment:** Candidates must achieve a pass grade in all core and elective modules and, for MSc, must pass the project module. Candidates who achieve a grade average of 70% or more over all modules may be eligible for a distinction.

5. Answer the questions about the text.

1. How long does the MSc or MEng course take?
2. How many credits is a project worth?
3. What is special about core modules?
4. What is the difference between doing an MSc and an MEng?
5. Who must approve which elective courses students take?
6. What kind of classes do the students get?
7. What do students have to do to get a distinction?

6. Complete the missing words in this email from a student to a friend.

MEng dissertation PhD module undergraduate project MSc



Hi Jenny,

How are things going with you? I'm sorry not to have written to you sooner but I've been desperately busy the CAD 1) _____ that I have to do for the elective 2) _____ I'm taking this term. It's really interesting and I think I might decide to do my final 3) _____ on a similar topic. At first I was only planning to do an 4) _____ but now I've decided to have a go at an 5) _____. I might even sign up for a 6) _____ if they'll have me! PhD student are usually offered teaching assistantship jobs on the courses they run for 7) _____ students, so it will be useful for my CV for the future.

Caroline

7. Write an email to a friend telling them about your studies. Try to use the expressions above.

8. Choose the correct word to complete each sentence.

1. I started out doing an MSc but then decided to *upgrade / defer* to a PhD.
2. Students whose first language is not English usually have attend a(n) *in-sessional / pre-sessional* language course before their main classes start.
3. Only six students have *enrolled / opted*, so the module will not run this year.
4. Most students decide to *sign / proceed* to a higher degree after completing their undergraduate course.
5. Core modules are *obligatory / optional*.
6. I won't be able to finish the dissertation this year, so I'll have to *opt / defer* till next year.
7. *Assessment / Assignment* consists of an end-of-module exam.

9. Watch the video about a typical day of students at a British university (Recording 4.1).

Answer the questions:
1. What year of studies is Marie in? And Poppy?
2. What subject is Marie's first lecture in?
3. What does PASS stand for? What happens at a PASS session?
4. What is Marie learning in the lab today? What is the topic of her class?
5. What event is Biosoc organizing in the evening? Will the girls go there?

10. Watch the video again and fill in the gaps in the sentences with the words from the video.

1. I live _____ _____ so I get the train in every day.
2. I'm _____ _____ the genetics.
3. In these sessions, second year students help to mentor first years with their _____ _____.
4. Lab classes are very helpful to _____ everything that we've learnt in our lectures.
5. There are many societies to get _____ with at the Guild.
6. Biosoc run socials and events throughout the _____.
7. There's a _____ of _____ to meet new friends.

4B. Applying to a University

1. Read this information about preparing an application for postgraduate study:

What should I do first?
Do all you can to learn about the **careers**[1] that will be open to you after studying – and what **qualifications** you will need in order to get the job you want.

What qualifications do I need for postgraduate study?
A first degree **is required** to study at postgraduate level.
The specific **entry requirements** for each course of study are listed on the individual course pages.
If needed, **clarification**[2] may **be sought**[3] from the department you are applying to.
Your performance in previous schooling is very important to your application **profile**[4].

What are the requirements for international students?
In addition to the general admission requirements, international applicants must **submit**[5]:

- A **transcript**[6] of university courses and grades, translated into English, and
- Results of the International English Language Testing System (IELTS) or Test of English as a Foreign Language (TOEFL), unless you have received **English-medium**[7] education for at least one year. Applicants must have a minimum IELTS score of 6.5 or a TOEFL score of 580.

Are any grants[8] **or scholarships**[9] **available for international students?**
Visit our International Office pages for details.

Read the text in A and answer a potential student's questions about the university.

1 Is it possible to do a postgraduate degree without having been to university before?
2 Where can I get more information about what qualifications I need for a specific course?
3 Will they want to know about my university grades?
4 When is an IELTS or TOEFL score not needed?
5 What IELTS score should applicants have?

2. Match the first part of the word combination on the left with the second part on the right:

personal	financial	seek	student	opportunities	score	student	degree
equal	mature	application	first	form	competition	guarantee	
minimum	tough			statement	clarification	loan	

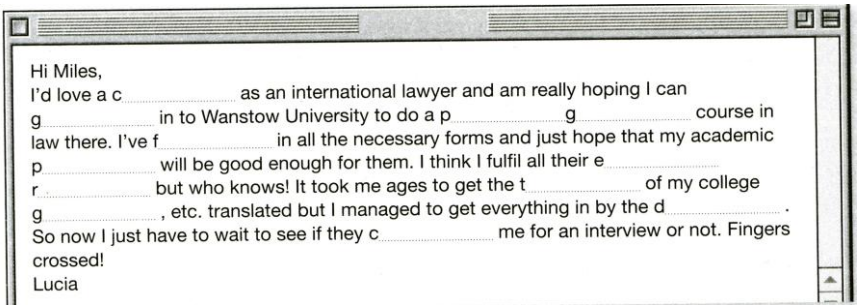
3. Look at this email from Tania to Liam. Tania is applying to study at Wanstow University.

Hi Liam,
At last I've **filled in** my application form and sent it off. It took ages. As well as all my personal details they wanted the names of two **referees**[1], **financial guarantees**[2], and I had to attach a **personal statement** saying why I wanted to go to Wanstow. Anyway, the **deadline**[3] is next Friday, then the website said they'd take about six weeks to **process**[4] the application after they **acknowledge**[5] it, then I might be **called for**[6] an interview. By that time the **references** have to be in. I'm just hoping that because I'm a **mature student**[7] I might have a good chance of being **offered a place** – Wanstow has a lot of mature students and they have a strong **equal opportunities policy**[8]. The **fees**[9] are pretty high, but I can get a **student loan**[10] if I **get in**[11].
Love, Tania

Match the words in bold to their explanations:

a) formal acceptance of financial responsibility and ability to pay (e.g. proof of a bank account)
b) a student at a college or university who is older than the usual age
c) deal with documents officially
d) money which must be repaid when one has completed one's studies
e) person who knows you and who is willing to describe and, usually, praise you to support your application
f) ask to attend
g) say that they have received it, NOT accepted it
h) if I am accepted and given a place (*informal*)
i) amount of money paid for a particular service
j) final date by which something must be done
k) principle of treating all people the same, regardless of sex, race, religion, etc.

4. Complete the missing words in this email with words from above. The first letter of each word is given to help you.



Hi Miles,
I'd love a c..... as an international lawyer and am really hoping I can g..... in to Wanstow University to do a p..... g..... course in law there. I've f..... in all the necessary forms and just hope that my academic p..... will be good enough for them. I think I fulfil all their e..... r..... but who knows! It took me ages to get the t..... of my college g....., etc. translated but I managed to get everything in by the d..... . So now I just have to wait to see if they c..... me for an interview or not. Fingers crossed!
Lucia

5. Why does the university want each of these things? Answer in full sentences using, where possible, some of the vocabulary above.

1 the names of two referees
2 financial guarantees
3 a personal statement
4 a transcript of courses taken and grades
5 a minimum TOEFL or IELTS score

6. Number the actions to show the order in which they usually happen for a prospective student.

..... wait for the application to be processed
..... find an appropriate course
..... attend an interview
..... attach a personal statement to the form
..... decide on what career they would like to do
..... be offered a place
..... be called for an interview
..... ask referees if it is all right to put their names on the application form
..... check that they fulfil the necessary entry requirements
..... fill in an application form

7. Look at the website of any English-speaking university that interests you. What information do they provide about applying to that university? Make a note of any other useful vocabulary you find there.

4C. Study Abroad

1. What are the benefits of studying abroad? Discuss with a partner.

Now watch a video about other students' study abroad experiences (Recording 4.2). Are their opinions similar to yours?

Take a note of the countries where they studied:

Kerianne	_____	Mary Ellen	_____
Dominic	_____	Jennifer	_____
Rebecca	_____	Niki	_____

2. Fill in the gaps with the expressions from the video:

irreplaceable boundaries environment
empathetic immersing experiential

1. Studying abroad is a great way to learn in an immersive _____.
2. As an _____ learner, really benefitted from not just reading about something in a textbook, but living it.
3. The type of personal growth that you get from studying and living in a foreign country is completely _____.
4. It helps you be more _____ to be around people who have very different worldviews and life experiences.
5. Study abroad is about expanding those _____ we put on ourselves.
6. Nobody has ever regretted studying abroad or _____ themselves in a new culture.

3. Match the words and phrases with their definitions.

1. matriculate	a) pursued in addition to the normal course of study
2. rigor (*BrE* rigour)	b) a university student's subsidiary subject or area of concentration (*AmE*)
3. extracurricular	c) poor (a person or area)
4. jet off	d) the quality of being extremely thorough and careful
5. juggle	e) cope with by balancing (several activities)
6. impoverished	f) play and move about cheerfully, excitedly, or energetically
7. opt for *smth*	g) be enrolled at a college or university
8. minor	h) make a choice from a range of possibilities
9. frolic	i) travel somewhere by aircraft

Which of these expressions are informal? Which can be used in an academic text?

4. Read an opinion article by an American university student. Do you agree or disagree with his views on study abroad?

STUDY ABROAD CAN TAKE AWAY FROM EDUCATION

by Ryan Weber, Opinions Editor , The Daily Illini
Posted: August 28, 2017

Senior year of high school during winter break, I spent three days blinking away the tiredness in my eyes as I perfected the last of my college applications. Four months later, I matriculated at the University.

The last thing I want to do is cut my time short here because I know how hard I had to work to receive that admissions packet sealed in an orange envelope.

Yet 27 percent of the University's students will choose to study abroad during their college years. According to U.S. News and World Report, Illinois is the 61st best university in the world, and more than a third of the schools that ranked higher are in the United States. The chances that a student studying abroad will attend one of those schools in the upper echelon are slim.

Students studying abroad will likely attend a university far worse than ours, unless of course, they enroll at Oxford or Kyoto.

Proponents of studying abroad will argue that academic rigor isn't important because when in another country, the most important material learned is outside the classroom. I won't disagree there because I've found my jobs and extracurricular activities to be just as enlightening as my course work. The

difference is, at the University I am taking an upper-level computer science class instead of Alpine skiing.

Perhaps the most compelling argument study-abroad supporters will use to persuade others to jet off to Prague or Paris for four months is how great it will look on a resume. How "I played in a fountain in Rome and ate delicious sweets in Salamanca" is more impressive on a resume than "I earned an A in advanced statistics" will forever escape me.

Then there are those who will say studying in another country shows employers how flexible and adaptable a student is to alien situations and experiences. Asking where the bathroom is in English while traveling through Berlin is just a little less impressive than juggling heavy course loads with two part-time jobs and a leadership position in a campus organization. But only a little.

Some students will choose to go abroad during college because they want to immerse themselves in a culture unlike any other. If a new culture is what students are looking for, they should look no farther than applying for inner-city jobs. Helping to improve the disadvantaged and most impoverished citizens of this country is an immersion experience far different from the comforts of western Chicago suburbia.

Quite possibly, a student is looking to improve his language skills. For example, the most commonly sought after study-abroad destination is Spain. Assuming students opt for this country because they want to practice what they learned in their Spanish minor, they should look no farther than Chicago's Spanish-speaking community.

Even at that extent, the most popular country among students in the United States isn't even a country that speaks a foreign language — it's the United Kingdom.

Now, I'm not naive enough to ignore that so many who go abroad say they don't regret doing it and how it was such a wonderful experience. Traveling to Rome or Cairo is full of wonder, beauty and awe. I guess I can understand why these students say studying abroad for a semester was the greatest experience of their lives. I mean, I would too, if I frolicked through Europe instead of burying my nose in a book.

4. Which of the following does the author NOT mention as a disadvantage of studying abroad?

a) Study programmes in Europe are of lower quality than education at American universities.
b) Future employers do not value graduates with international experience.
c) Extracurricular activities abroad are often not related to the content of study.
d) With English being widely used across the globe, American student don't often improve their language skills.
e) It is not always necessary to go abroad to experience a different culture.

5. Read the description of several scholarships available for international students at European universities and fill in the table:

PhD Scholarship - Bioproduction

A PhD scholarship is available within the Centre for Process Analytics and Control Technology in the School of Chemical Engineering and Advanced Materials to carry out research in the area of data analysis and predictive modelling as part of a research project developing new technologies for the bio-production of renewable materials (bio-materials).

Candidates should have a first-class or upper-second-class Honours degree, or equivalent, in chemical engineering or a related subject, be able to demonstrate good communication skills and be willing to work for periods of time with collaborating companies and universities across Europe. Due to funding criteria, only students from the EU are eligible for this scholarship.

Closing date for applications: 19th December 2018. Further details can be obtained from Professor Julian Evans (**jevans@ncl-uni.edu**).

Erasmus Mundus Scholarships in Computational Mechanics

Erasmus Mundus Scholarships are available to highly-qualified non-European students with outstanding academic records which will begin the Master of Science in Computational Mechanics in fall 2008. Candidates must hold by fall 2008 a Bachelor of Science in Engineering or in Applied Mathematics, Physics or a similar science based subject, or appropriate degree deemed to be a satisfactory standard for admission (at least 3 years programme). Applicants should qualify as "third-country nationals", as defined in the Erasmus Mundus programme, that is nationals coming from all countries other than the EU Member States, the candidate countries for accession to the EU, and European Economic Area countries.

Candidates will be required to provide: (a) the degree classification, class rank and full academic transcript; (b) the IELTS or similarly internationally recognised English language proficiency score; (c) two letters of recommendation; (d) a statement of purpose, describing their interest in computational mechanics, their

personal aims in this field and their preferred areas of specialisation; (e) a complete Curriculum Vitae including additional language skills other than English and any additional information available that may relate to the potential performance of the student in the course.

Scholarships will be awarded for two years. In each of these years, the student will receive a total of 21.000 Euro in 10 monthly grants per year, for a grand total of 42.000 Euro. Tuition fees are 8.000 Euro per year and will be deduced from the scholarship.

Deadline for online application: 8am (GMT) January 31st 2018. Deadline for receiving supporting paper documents at the Master Course admissions office: February 14th 2018.

Master of Science in Global Innovation Management

Four awards of £5,000 towards international tuition fees are available for full-time Masters study within a Masters Programme in Global Innovation Management.

These scholarships are offered on a country-specific basis to applicants from China, India, Turkey and the Middle East. Only nationals of those countries holding offers for a Masters programme starting in October 2018 who have returned their scholarship application by 30 May 2018 will be considered. Applicants will typically be expected to have or expect to obtain a European upper second class degree or a national bachelor's degree an engineering, science or technology subject with excellent degree marks (applicants should be among the top 10% of their class or have a GPA of 3.5). Applicants need to be fluent in English. Both TOEFL or IELTS are accepted, the latter with band 6.5 and above. TOEFL – depending on type of test, but equally high. German language skills are advantageous.

Students will be selected on the basis of their CVs, study and academic merits, recommendations, language skills (English), etc. Applicants who require pre-sessional English will be considered but will have a lower priority for an award than applicants who meet the University's English language requirements. Preference will be given to applicants who can demonstrate, through their application, the potential to progress to doctoral study.

	Scholarship 1	**Scholarship 2**	**Scholarship 3**
Field of study			
Degree/qualification to be earned			
Language of instruction			
Academic requirements			

Eligibility criteria			
Documents required			
Financial conditions			
Deadline			

Now study the profiles of three perspective international students. Which scholarship does each of them qualify for? Why or why not?

Zhang Chun Yu

Home country: China

Educational level: BSc Honours

Field of Study: Mechanical Engineering

Language knowledge: native Chinese, fluent English, basic French

Karen Weber

Home country: Germany

Educational level: MSc

Field of Study: Information Engineering

Language knowledge: native German, proficient in English (TOEFL score - 563)

Isabel Fernandez

Home country: Mexico

Educational level: BSc

Field of Study: Physics

GPA: 3.9

Language knowledge: native Spanish, upper-intermediate English

APPENDIX

CREATING AN EFFECTIVE ACADEMIC CV

Academic CVs should only be used for academic applications and have a unique format. The key extra features compared to general CVs are more focus on:

• publications
• your research activities
• funding awarded.

Although academic CVs are longer than other types of CVs, no more than four pages is often recommended. There is variation in the expected format in different countries, so try to find out what is expected. Here is some general guidance on creating your academic CV.

• Tailor your academic CV for every application. Analyse the job description and specification, if available. Your CV needs to present strong evidence that you fulfil the job requirements

• Highlight your academic achievements and research interests. Find out as much as you can about the research area you are applying to, so you understand how your expertise complements theirs and can judge their familiarity with technical language of your research area

• Keep jargon to a minimum and write with clarity. Spell out your qualifications, research, publications and any other relevant information. Describe your contribution to publications, particularly high impact publications. Don't be modest

• Publications: a reverse chronological list is a prerequisite, best presented as an appendix. Include journal articles, books or chapters of books, reports and patents

• Research experience: in reverse chronological order. Emphasise specialist/technical expertise, IT skills, plus any skills required for the job. including project and people management

• Education: in reverse chronological order. Focus on higher education onwards. Include awards and scholarships. Include the name of your doctoral supervisor and funding body, if appropriate

• Funding: include awards for research projects or to attend meetings or conferences, prizes. Include the amount of money allocated, where useful

• Teaching experience: include lecturing, supervision, demonstrating, curriculum development, seminar and group work, assessment etc. especially if teaching is in the job description

• Administrative experience -. Highlight any positions of responsibility, event and course organisation, committee membership, etc, especially if administration features in the job description.
• Professional qualifications: membership of learned societies or professional bodies
• Professional development activities, including any training undertaken – e.g. teaching and learning qualifications, specialist research or analytical techniques, time management, academic writing, research supervision
• Attendance at conferences and seminars - highlight any invitations to present, provide papers or posters
• References - details of two or three referees (usually at least two academic). Ask for permission first.
• Outside interests are unlikely to be relevant.

SAMPLE ACADEMIC CV

Peter Everett

9A Gordon Road, Portsmouth, Hampshire, PO10 8AZ
Tel: (01321) 612786 **E-mail:** peverett91@hotmail.com

Education

2012- Present University of Portsmouth
PhD in Medicinal Chemistry and Biochemistry
Title: Identification of New Mycobacterial Mycolyl Transferases by Chemical Approaches.
Supervisor: Dr. G. S. Besra
Projects:
-Synthesis and biological evaluation of new inhibitors of mycobacterial mycolyl transferases relevant to the treatment of tuberculosis as a part of *GlaxoWellcome CASE studentship**;***
-The synthesis of glycolipids to investigate the structural requirements for antigen recognition and presentation by CD1
Both projects are designed towards understanding fundamental processes within the growing mycobacterium and its mode of action. Full details in attached appendix**.**
2008-2012 University of Southampton
BSc. (Hons) Medicinal Chemistry, Upper Second Class
Dissertation Project: The synthesis of 2-alkyl-3-hydroxy long-chain acids, and their 6-O-glucose esters. Modules studied include: Drug Design, Chemical Toxicology, Cancer Chemotherapy, Biochemistry and Pharmacology.
2006- 2008 QE Sixth Form College, Darlington
-'A' levels Mathematics (A); Chemistry (B); Physics (B);

-'S' level Chemistry (grade 3)

2001-2006 Hurworth Comprehensive School, Darlington

-9 GCSE's, 8 Grade 'A', 1 Grade 'B'

Research Experience

Mar 2012- Present University of Portsmouth

Postgraduate Demonstrator

-Whilst undertaking PhD have constantly been involved with the supervision of undergraduates in their practical classes. At any one time I have been personally responsible for as many as forty students.

-Solely responsible for the supervision of an *ERASMUS* student and have supervised a number of masters and undergraduate students with their dissertations. This has honed skills and understanding of project management, development and the importance of meeting deadlines.

Apr 2008- Jan 2012 Glaxo Wellcome Research & Development, Stevenage CASE Placement

-As part of sponsorship by GlaxoWellcome was involved in a placement within a Medicinal Chemistry Team at their Stevenage site.

Jul 2010- Sept 2011 Microbiology Department, Colorado State University, USA

Industrial Placement

-Worked as part of Professor I M Microbiologist's internationally renowned research group in the field of tuberculosis research.

-Work involved the synthesis of carbohydrate derivatives that could be used to investigate the biosynthesis of the mycobacterial cell wall with the aim of developing novel inhibitors for Mycobacterium tuberculosis.

-Several publications resulted from this work – see later section for details.

Research Techniques

Competent in the following techniques:

-Parallel synthesis, for both development of optimum reaction conditions and multiple synthesis.

-Automated parallel purification techniques such as Biotage and Solid Phase Extraction processes.

Working knowledge of NMR and Mass Spectroscopy, gained during time at Prof. I M Jenkins' lab.

IT Skills

Extensive knowledge of all Microsoft programs, and whilst at GlaxoWellcome attended advanced courses in Excel, PowerPoint and Word. Experienced in the use of advanced Internet search engines and am currently hoping to construct a Southampton university Chemistry webpage. Proficient in a range of Chemistry software packages including the ISIS suite, ChemDraw and various NMR packages.

Interests & Achievements

-Awarded Southampton Chemistry Department- GlaxoWellcome sponsored prize 2010
-University of Portsmouth Staff Cricket Team 2012- present
-Secretary, Chemistry Department Student Society 2012-11

Referees

-Dr. Gabrielle S. Besra, University of Portsmouth, School of Pharmacy and Biomedical Sciences, St. Michael's Building White Swan Road Portsmouth PO1 2DT, +44 (0)23 9284 3546, gsbesra@port.ac.uk
-Dr. David E. Stephens, GSK Medicines Research Centre, Gunnels Wood Road Stevenage Herts SG1 2NY Tel: +44 (0)1438 745745, davidstephens1@gsk.com.uk

Research Abstract

Mycobacterium tuberculosis, the bacterium that causes TB in humans, contains in its cell wall a number of complex sugar-based molecules that are not found in humans. The enzymes that are used by the organisms to make these molecules are prime targets for attack by new anti-microbial drugs. Research to identify these enzymes and their functionality, through rational drug design, is leading to the development of therapeutics to block their activity. The outer cell wall of *M. Tuberculosis* helps to protect it, but it could also prove to be its Achilles heel.

Research aim was to synthesise analogues of naturally occurring polyprenols, such as decaprenol, which incorporated a chemical handle and which could subsequently be used to study the function of such molecules. By simply varying the sugar portion of the molecule a whole host of probes can be synthesised. With this in mind a strategy to incorporate a benzophenone photolabel into a synthetic analogue of the natural DPM substrate was derived. This involved the stepwise formation of carbon-carbon bonds to form the linear prenyl skeleton. However, this strategy was an inefficient linear approach and was difficult to implement. An alternative strategy to the all carbon synthesis was derived in which the whole of the middle section of prenyl chain was replaced by the various linker units. This allowed the investigation of the structural constraints for molecular recognition.

A simple phosphorylation procedure is being investigated to utilise these photoprobes as sugar acceptor units. Once this work has been completed and the initial probes have been biologically evaluated it is hoped that several more probes can be designed and synthesised to strengthen any conclusions drawn from the testing results.

Publications

-L. Kremer, J.D. Douglas, A.R. Baulard, C. Morehouse, **P.R. Everett**, D. Alland, L.G .Dover, J.H. Lakey, W.R. Jacobs Jr, P.J. Brenann, D.E. Minnikin and G.S. Besra, Thiolactomycin and related analogues as novel antimycobacterial agents targeting kasA and kasB condensing enzymes in *Mycobacterium tuberculosis, J. Biol.Chem.,* 2006, 275, 16857- 16864.

-D.B. Moody, B. B. Reinhold, **P.R. Everett**, E.M. Beckman, D.E. Frederique, S.T. Furlong, S.Ye, V.N. Reinhold, P.A. Sieling, R.L. Modlin, G.S. Besra and S.A. Porcelli, Structural requirements for glycolipid antigen recognition by CD1b-restricted cells, Science 2003, 278, 283 – 286.

-D.B. Moody, B.B. Reinhold, **P.R. Everett**, E.M. Beckman, S.T. Furlong, S. Ye, V.N. Reinhold, P.A. Sieling, R.L. Modlin, G.S. Besra and S.A. Porcelli, A structural motif for glycolipid T Cell antigens reveals a model for antigen presentation by CD1, Arthritis & Rheumatism, 2003, 40, 24.

Conferences & Courses Attended

-Presented Poster at RSC Carbohydrates Group and RSC Biological and Medicinal Chemistry Joint Spring Meeting, York, March 2010

-Third Carbohydrate Bioengineering Meeting, Portsmouth, April 2011

-Royal Society of Chemistry, Annual Conference, Edinburgh, September 2009

-Business Biotechnology Course including technology transfer, patents and negotiating skills at the Bioscience Centre, Centre for Life, Newcastle upon Tyne, October 2010

HOW TO WRITE REFERENCES FOR YOUR REFERENCE LIST AND BIBLIOGRAPHY: HARVARD STYLE

Remember: Your lecturers consider accurate and consistent referencing to be an important part of your academic work.

The examples on the following pages are in two parts:

• the information you should collect about each piece of work you use; and

• how this information is presented when you write a full reference.

Book: print

Author / Editor (if it is an editor always put (ed.) after the name)
(Year of publication)
Title (this should be in italics)
Series title and number (if part of a series)
Edition (if not the first edition)

Place of publication (if there is more than one place listed, use the first named)
Publisher
Simons, N. E., Menzies, B. & Matthews, M. (2001) A Short Course in Soil and Rock Slope Engineering. London, Thomas Telford Publishing.

Book: chapter in an edited book

Author of the chapter
(Year of publication)
Title of chapter followed by In:
Editor (always put (ed.) after the name)
Title (this should be in italics)
Series title and number (if part of a series)
Edition (if not the first edition)
Place of publication (if there is more than one place listed, use the first named)
Publisher
Page numbers (use 'p.' before a single page number and 'pp.' where there are multiple pages)
Partridge, H. & Hallam, G. (2007) Evidence-based practice and information literacy. In: Lipu, S., Williamson, K. & Lloyd, A. (eds.) Exploring methods in information literacy research. Wagga Wagga, Australia, Centre for Information Studies, pp. 149–170.

Journal article: print

Author
(Year of publication)
Title of journal article
Title of journal (this should be in italics)
Volume number
Issue number
Page numbers of the article (do not use 'p'. before the page numbers)
Chhibber, P. K. & Majumdar, S. K. (1999) Foreign ownership and profitability: Property rights, control, and the performance of firms in Indian industry. Journal of Law & Economics. 42 (1), 209–238.

Journal article: online / electronic

Most online articles will have a DOI (Digital Object Identifier) and you should use this in your reference. The DOI is a permanent identifier provided by publishers so that the article can always be found. If there is no DOI then you should use the URL. Some lecturers will ask you to reference an online journal article as a print article, so always check your coursework guidance.
To find the DOI, when you read an article online, check the article details as you will usually find the DOI at the start of the article.

Author
(Year of publication)
Title of journal article
Title of journal (this should be in italics)
Volume number
Issue number
Page numbers of the article (do not use 'p'. before the page numbers)
Available from: URL or DOI
[Date of access]

Arrami, M. & Garner, H. (2008) A tale of two citations. Nature. 451 (7177), 397–399. Available from: http://www.nature.com/nature/journal/v451/n7177/full/451397a.html [Accessed 20th January 2015].

or

Wang, F., Maidment, G., Missenden, J. & Tozer, R. (2007) The novel use of phase change materials in refrigeration plant. Part 1: Experimental investigation. Applied Thermal Engineering. 27 (17–18), 2893–2901. Available from: doi:10.1016/j.applthermaleng.2005.06.011 [Accessed 15th July 2015].

or

Read, B. (2008) Anti-cheating crusader vexes some professors. Chronicle of Higher Education. 54 (25). Available from: http://global.factiva.com/ [Accessed 18th June 2015].

Note: articles published online may not have page numbers.

Conference proceeding: individual paper

Author
(Year of publication)
Title of conference paper followed by, In:
Editor / Organisation (if it is an editor always put (ed.) after the name)
Title of conference proceeding (this should be in italics)
Place of publication
Publisher
Page numbers (use 'p.' before a single page number and 'pp.' where there are multiple pages)

Wittke, M. (2006) Design, construction, supervision and long-term behaviour of tunnels in swelling rock. In: Van Cotthem, A., Charlier, R., Thimus, J.-F. and Tshibangu, J.-P. (eds.) Eurock 2006: Multiphysics coupling and long term behaviour in rock mechanics: Proceedings of the International Symposium of the International Society for Rock Mechanics, EUROCK 2006, 9–12 May 2006, Liege, Belgium. London, Taylor & Francis. pp. 211–216.

Standard

Name of Standard Body / Institution
(Year of publication)
Standard number
Title (this should be in italics)
Place of publication
Publisher

British Standards Institution (2003) BS 5950–8:2003. Structural use of steelwork in building: code of practice for fire resistant design. London, BSI.

Web page / website

Author / Editor (use the corporate author if no individual author or editor is named)
(Year of publication) (if available; if there is no date, use the abbreviation n.d.)
Title (this should be in italics)
Available from: URL
[Date of access]

European Space Agency. (2015) Rosetta: rendezvous with a comet. Available from: http://rosetta.esa.int [Accessed 15th June 2015].

ЗАКЛЮЧЕНИЕ

Знание иностранного языка является необходимым условием для развития современного инженера, которому приходится общаться с людьми из разных стран: участвовать в научных конференциях, вести переговоры на иностранном языке, грамотно заниматься профессиональной деятельностью и строить карьеру. Все это требует знания основ делового, профессионального и научного общения на иностранном языке в устной и письменной формах.

В данном пособии авторы представили задания, направленные на овладение иноязычными коммуникативными навыками (английский язык) в области профессиональной, научной и учебной деятельности, необходимыми будущим специалистам в области био- и химических технологий. Включенный в пособие лексико-грамматический материал способствует формированию коммуникативно-познавательной компетенции обучаемых в наиболее распространенных ситуациях деловой, профессиональной и научной сфер общения во всех видах речевой деятельности (аудирование, говорение, чтение, письмо).

СПИСОК ИСПОЛЬЗОВАННЫХ ИСТОЧНИКОВ И ДОПОЛНИТЕЛЬНАЯ ЛИТЕРАТУРА

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- http://www.victoria.ac.nz/lals/resources/academicwordlist/
  The Academic Word List (AWL) developed by Averil Coxhead of Victoria University of Wellington, New Zealand, is a very useful resource for teachers and learners of English for Academic Purposes.
- dictionary.cambridge.org
  The official Cambridge University Press site gives an opportunity to consult a variety of monolingual and bilingual dictionaries of English, including Business English Dictionary and Thesaurus.
- www.answers.com/topic
  This website is a cross between a monolingual dictionary and an encyclopedia. You enter a term and get a short explanation of what it means as well as detailed background information.
- www.writing.engr.psu.edu
  This website is for engineering and science students. It contains guidelines to writing reports and proposals, etc. The website also provides exercises for writing and speaking assignments in engineering.
- owl.english.purdue.edu/owl/
  Online Writing Lab of Purdue University offers a variety of advice and exercises on university-related writing. This resource is in American English.

- http://unilearning.uow.edu.au/main.html
  This website is an interactive tutorial in English-language academic writing and reading skills.
- www.theengineer.co.uk
  This website informs about latest developments in various fields of engineering.
- www.howstuffworks.com
  This website introduces the operating principles of technical devices and processes and illustrates them by videos.

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