РОСЖЕЛДОР

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(ФГБОУ ВО РГУПС)

ИНОСТРАННЫЙ ЯЗЫК ДЛЯ РЕШЕНИЯ ЗАДАЧ ПРОФЕССИОНАЛЬНОЙ ДЕЯТЕЛЬНОСТИ

(английский язык)

Учебно-методическое пособие
для обучающихся в магистратуре

Ростов-на-Дону
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Иностранный язык для решения задач профессиональной деятельности (английский язык): учебно-методическое пособие для обучающихся в магистратуре / О.Н. Бессарабова, А.П. Жданько, А.П. Кононенко, В.А. Ражина, О.Б. Симонова, Н.А. Сухорукова, О.В. Маруневич, Э.Ш. Шефиева; ФГБОУ ВО РГУПС. – Ростов н/Д, 2017. – 210 с.

Пособие предназначено для методического оснащения изучения дисциплины «Иностранный язык для решения задач профессиональной деятельности». Разделы пособия также охватывают темы, которые могут изучаться в процессе освоения дисциплины «Иностранный язык как средство делового общения». Рекомендуется использовать для всех направлений подготовки обучающихся магистратуры, изучающих английский язык.

Одобрено к изданию кафедрой «Иностранные языки».

Содержание

Введение

Целью дисциплины «Иностранный язык для решения задач профессиональной деятельности» является совершенствование иноязычной коммуникативной компетенции, которая может позволить обучающимся осуществлять коммуникацию в устной и письменной формах на родном и иностранном языках в ситуациях социального и профессионального общения. Развитие различных составляющих ИКК – языковой, речевой, социокультурной, учебно-познавательной, компенсаторной – предусмотрено компетенциями, зафиксированными в программах по данной дисциплине для различных направлений подготовки магистратуры, и реализуется посредством совершенствования конкретных навыков и умений, обеспечивающих речевую деятельность в соответствии с целями и задачами общения в конкретной ситуации.

Данное пособие охватывает 16 тем, отражающих возможные ситуации межличностного и межкультурного взаимодействия, с которыми могут столкнуться обучающиеся в ходе учебно-познавательной, профессиональной и научно-исследовательской деятельности. Предлагаемый комплекс заданий нацелен на совершенствование коммуникативных умений и навыков различных видов речевой деятельности.

Пособие содержит тексты и разнообразные упражнения, направленные на усвоение специальной лексики и профессиональной терминологии, дальнейшее развитие у обучающихся навыков различных видов чтения, говорения и письма, необходимое для расширения языковой и речевой составляющих иноязычной коммуникативной компетенции. В пособии представлен страноведческий и культурологический материал, усвоение которого должно повысить способность к коммуникации на иностранном языке для решения задач межличностного и межкультурного взаимодействия, способствовать совершенствованию социокультурной компетенции.

Работа с пособием нацелена на повышение интеллектуального и общекультурного уровня и расширение кругозора обучающихся, совершенствование и развитие учебно-познавательной компетенции.

Предлагаемый комплекс упражнений направлен развитие навыков получения информации из оригинальных англоязычных источников, навыков аннотирования и реферирования текстов и всего комплекса навыков и умений, необходимых для успешного использования иностранного языка в профессиональной деятельности.

Тема 1: ДЕЛОВЫЕ КОНТАКТЫ (BUSINESS CONTACTS)

Цели занятия:
1.	Развитие умений ведения диалога-расспроса по теме «Деловые контакты», соблюдая нормы речевого этикета, принятые в стране изучаемого языка.
2.	Развитие навыков и умений чтения, перевода аутентичных текстов по теме «Деловые контакты».
3.	Развитие навыков и умений монологической речи с передачей основного содержания прочитанного текста.
4.	Развитие навыков и умений употребления в речи различных коммуникативных типов предложений (общий, специальный, разделительный, альтернативный вопросы).

Задание 1. Выполните тест в приложении 1 на стр.120 и оцените свой уровень владения английским языком.

Задание 2. Прочтите текст и составьте диалог между коллегами во время деловой встречи, используя образцы приветствия, представления и прощания, данные в тексте.

Introducing Yourself For the First Time in a Business Meetings
Introducing yourself for the first time in a business meetings or formal situations is important. Many times the introduction is the first contact that you have with clients, bosses, partners or coworkers. Doing it correctly gives a strong first impression.

Let´s imagine that you are in a meeting where you will be directly meeting another person (whether it is a boss, a coworker, partner or client). You want to approach this person (or persons) and let them know who you are and possibly your position in your company, or who you work for.

Intro Sentences:
- I don´t believe we have met before, I´m ………….. (or: my name is………….)
- I don´t think we have formally met yet, I´m…………… (or: my name is …………….)
- I just wanted to introduce myself, I´m ………………..(or: my name is…………….).

Letting them know your position:
- I am responsible for ……………… *(Example: sales and marketing at Virgin Records, accounts and services for the Brazilian offices)*
- I am in charge of ……………………….. *(Example: research and development, environmental control)*
- I am ……….. (position) …………….. (A doctor at the Mainland Hospital)

Follow the pattern:

- Hello, I don´t believe we have met before, I´m Jake Manning. I´m responsible for quality control at Timmins Bakery.
- Good afternoon. I just wanted to introduce myself, I´m Lorena Tibbs. I´m in charge of overseeing the new developments on the Westside Site.
- Hello, I don´t think we have formally met yet, my name is Karen Armstrong. I´m a research student here in the Bio Lab.

After meeting you can say:
- It´s very nice to meet you.
- It´s a pleasure to meet you.
- Pleased to meet you.
- Pleasure to meet you.
- I´m pleased to (finally) meet you.

Returning the compliment:
- Likewise.
- And you.

Saying Goodbye:
- Goodbye, it´s a pleasure to have met you.
- It was very nice to meet you, I hope we meet again soon.
- Goodbye, it´s nice to have met you.
- It was a pleasure finally meeting you.

Задание 3. Прочтите и переведите текст. Расскажите кратко о правилах проведения успешной деловой встречи.

Business Meetings

Every business, whether it has 2 employees or 2,000 has meetings as a regular part of getting things done. Although employees can communicate with one another in an organization in many different ways, business meetings — if they are conducted the right way — can be incredibly effective and efficient.

Meetings are not only one of the most important ways for employees to communicate within organizations, but they're also the way that teams get their work done. Although individual team members work on tasks outside of meetings, team meetings give members the opportunity to come together to determine the team's goals, its plans for achieving its goals, and who will do what — and when.

Eight ways to make meetings better

Everyone has suffered through far too many meetings that took up far too much time and accomplished far too little. Unfortunately, this sad state of affairs has happened so often that you may find yourself becoming numb to the fact that your meetings aren't as good as they should be — and could be, if you just had some way to fix them.

Help is close at hand! You can make your meetings better, and you don't have to tolerate meetings that accomplish little or nothing. The power is within

you, whether you are a meeting leader or a participant. Do you want to find out how? Here are some time-tested techniques to ensure better business meetings:

•Be prepared. Meetings are work, so, just as in any other work activity, the better prepared you are for them, the better the results you can expect.

•Have an agenda. An agenda — a list of the topics to be covered during the course of a meeting — can play a critical role in the success of any meeting. It shows participants where they are going, but it's then up to the participants to figure out how to get there. Be sure to distribute the agenda and any prework in advance. By distributing the agenda and prework before the meeting, participants can prepare for the meeting ahead of time. As a result, they will be immediately engaged in the business of the meeting, and they'll waste far less time throughout the meeting.

•Start on time and end on time. Everyone has suffered through meetings that went waybeyond the scheduled ending time. That situation would be fine if no one had anything else to do at work. But in these days of faster and more flexible organizations, everyone always has plenty of work on the to-do list. If you announce the length of the meeting and then stick to it, fewer participants will keep looking at their watches, and more participants will take an active role in your meetings.

•Have fewer (but better) meetings. Call a meeting only when it is absolutely necessary. Before you call a meeting, ask yourself whether you can achieve your goal in some other way, perhaps through a one-on-one discussion with someone in your organization, a telephone conference call, or a simple exchange of e-mail. As you reduce the number of meetings you have, be sure to improve their quality.

•Include, rather than exclude. Meetings are only as good as the ideas that the participants bring forward. Great ideas can come from anyone in an organization, not just its managers. Roy Disney, vice chairman of the Walt Disney Company, tells a great story that illustrates this point perfectly. Says Disney, "There's an old story about Walt from the early days when we were making short subjects — really just a collection of gags. Every week, Walt had a gag contest, and everybody was free to enter — the winner got $5, which was a lot of money during the Depression. And who kept winning, week after week? The janitor. You see, it's not about who's the boss. It's about who's got the best ideas."

•Maintain the focus. Meetings can easily get off track and stay off track. The result? Meetings do not achieve their goals. Meeting leaders and participants must actively work to keep meetings focused on the agenda items. Topics should not include the results of the latest football game, or who had lunch with whom, or who's driving that shiny new Porsche. Whenever you see the meeting drifting off track, speak up and push the other attendees to get it back in focus.

•Capture and assign action items. Unless they are held purely to communicate information, or for other special purposes, most meetings result in action items, tasks, and other assignments for one or more participants. Don't assume that all participants are going to take their assignments to heart and remember all the details. Instead, be sure that someone has agreed to take on the

job of record keeping. Immediately after the meeting, summarize the outcome of the meeting, as well as assignments and timelines, and e-mail a copy of this summary to all attendees.

•Get feedback. Every meeting has room for improvement. Be sure to solicit feedback from meeting attendees on how the meeting went right for them — and how it went wrong. Was the meeting too long? Did one person dominate the discussion? Were attendees unprepared? Were the items on the agenda unclear? Whatever the problems, you can't fix them if you don't know about them. You can use a simple form to solicit feedback, or you can simply informally speak with attendees after the meeting to get their input.

Задание 4. Ознакомьтесь с грамматическим материалом.

Структура английского предложения

Порядок слов в утвердительном, вопросительном и отрицательном предложениях.

Предложением называется сочетание слов, выражающее законченную мысль:

The sun rises in the east. - Солнце всходит на востоке.

Слова, входящие в состав предложения и отвечающие на какой-нибудь вопрос, называются членами предложения. Члены предложения делятся на главные и второстепенные. К главным членам предложения относятся подлежащее (the Subject) и сказуемое (the Predicate). К второстепенным членам предложения относятся дополнение (the Object), определение (the Attribute) и обстоятельства (the Adverbial Modifiers).

По своей структуре предложения делятся на простые и сложные. Сложные предложения в свою очередь делятся на сложносочиненные и сложноподчиненные:

The steamer arrived at the port yesterday. - Пароход прибыл в порт вчера. (простое предложение)

The agreement was signed, and the delegation left Moscow. - Соглашение было подписано, и делегация уехала из Москвы. (сложносочиненное предложение)

After the goods had been unloaded, they were taken to the warehouse. - После того как товары были выгружены, они были отвезены на склад. (сложноподчиненное предложение)

В зависимости от цели высказывания предложения делятся на следующие виды:

a) Повествовательные предложения (Declarative Sentences):

The library is on the second floor. - Библиотека находится на втором этаже.

б) Вопросительные предложения (Interrogative Sentences):

When did you come? - Когда вы пришли?

в) Повелительные предложения (Imperative Sentences):

Open the window, please. - Откройте окно, пожалуйста.

г) Восклицательные предложения (Exclamatory Sentences):

How well she sings! - Как она хорошо поет!

а) Порядок слов в утвердительном предложении

The teachers examine the students in spring and winter. - Преподаватели экзаменуют студентов весной и зимой.

Причем по-русски это можно сказать:

Преподаватели экзаменуют студентов весной и зимой;

Весной и зимой преподаватели экзаменуют студентов;

Студентов экзаменуют преподаватели весной и зимой.

В английском же предложении перестановка местами подлежащего и дополнения приведет к иному смыслу:

The students examine the teachers in spring and winter. - Студенты экзаменуют преподавателей весной и зимой.

б) Порядок слов в вопросительном предложении

Вопросительное предложение может быть построено двумя способами:

1. Без вспомогательного глагола. Эта конструкция употребляется с глаголами have, be, can, may, must.

Can you speak English? - Можете вы говорить по английски?

Have you a sister? - У вас есть сестра?

Are you a student? - Вы студент?

2. При помощи вспомогательных глаголов (do, does) - форма настоящего времени, did (форма прошедшего времени), shall (will) (будущее время).

Эта конструкция употребляется со всеми остальными глаголами в английском языке:

Do you speak English? - Вы говорите по - английски?

Does he live here? - Он живет здесь?

Если вопрос начинается с вопросительного слова, то оно ставится перед вспомогательным глаголом.

Where does Peter live? - Где Питер живет?

When do you come home? - Когда вы приходите домой?

в) Порядок слов в отрицательном предложении

Отрицательное предложение может быть построено так же, как и вопросительное, при помощи вспомогательного глагола и без него.

We do not speak English.- Мы не говорим по - английски.

He does not live here. - Он не живет здесь.

I can not come to you. - Я не могу прийти к тебе.

He is not at home. - Его нет дома.
I have no sister. - У меня нет сестры.

Задание 5. Найдите подлежащее в предложениях.

• It is going to rain tonight — Сегодня вечером будет дождь.
• To everyone's surprise, the album was selling very slowly — К всеобщему удивлению, альбом продавался очень вяло.
• My friend's dog likes carrots — У моего друга собака любит морковку.
• Snow removal in rural areas is often delayed — Уборка снега в сельской местности часто задерживается.

Задание 6. Преобразуйте утверждение в отрицание.

• The movie was very interesting — Фильм был очень интересным.
• We will come tomorrow — Мы придем завтра.
• I recommend this book — Я рекомендую эту книгу.
• My son slept well last night — Мой сынок хорошо спал вчера ночью.

Задание 7. Задайте общий вопрос по схеме.

Кролики делают норки — Rabbits make burrows.
Делают ли кролики норки? — Do rabbits make burrows?
• Вы были заняты вчера — You were busy yesterday.
Были ли вы заняты вчера? — ___
• Мама готовит ужин — Mom is making dinner.
Готовит ли мама ужин? — ___
• Тодд починил мою машину — Todd has fixed my car.
Починил ли Тодд мою машину? —

Контрольное задание.
Составьте по 2 общих, специальных, разделительных, альтернативных вопросов к тексту «Business Meetings».

Тема 2. УЧАСТИЕ В КОНФЕРЕНЦИИ
(PARTICIPATION AT THE CONFERENCE)

Цели занятия:

1. Развитие умений ведения диалога-расспроса (участие в конференции, дискуссии) по теме «Участие в конференции», соблюдая нормы речевого этикета, принятые в стране изучаемого языка.

2. Развитие умений ведения документации при регистрации на конференции или заполнение анкеты участника.

3. Развитие навыков и умений монологической и диалогической речи, связанной с социальным и профессиональным общением: деловые встречи и участие в конференции.

4. Развитие навыков и умений употребления в речи различных коммуникативных типов предложений (общий, специальный, разделительный, альтернативный вопросы).

Задание 1. Ответьте на вопросы:

1. Have you ever participated in international conferences/ symposia/ congresses?
2. What was the last conference you took part in?
3. Where was the conference held?
4. What problems were considered and discussed?
5. How many participants attended the conference/session/ workshop?
6. Which paper or presentation attracted special attention and was of particular interest for you?
7. What problem did it deal with?
8. What was your presentation about?
9. What was your time limit?
10. Have you ever presented a paper at the conference in English?
11. Do you find your English sufficient/ adequate to participate in international conferences?
12. Do you think you have a good/poor knowledge of English?
13. Why is it necessary/ important for a scientist to know foreign languages nowadays?

Задание 2. Переведите словосочетания на русский язык.

a meeting/a session
a plenary meeting/the opening ceremony
a speaker
a chairman/a chairwoman/a chairperson
to call upon someone/to give the floor to someone
to set up/to fix the time limit

to break the time limit
to call attention to the time limit
to stimulate discussions
to ask somebody a question
to call for questions
to submit abstracts/ to present papers/ to give a poster presentation
to take part in/ to participate in/ to attend a conference
to take the floor
to keep/ to stick to the point
to digress from the subject
to have a good/ poor knowledge/ command of English
to find the knowledge of English adequate/ inadequate to …
to find English hard to follow

Задание 3. Используя словосочетания из Задания 2, заполните пропуски в предложениях.

1. Every year conferences … in our university.
2. This year I … in the conference which was held …
3. I had to … the abstract covering the problem of …
4. The time limit was … and I had ten minutes to …
5. My report … the problem which … much attention.
6. Of … interest were the reports presented by Mr S and Mr M.
7. I … in understanding English, because I find my English …

Задание 4. Заполните регистрационную форму участника конференции.

Registration Form

Last/Family/Surname: _____ First/Given Name： _____
Organization: _____
Job Title: _____
Address: _____
Phone: _____ Mobile: _____
E-mail: _____ FAX:
_____
Emergency Contact name and phone: _____

VISA REQUIREMENTS
If you need a visa to China, please enter the following info:
Full name (as it is written in your passport):_____

Nationality:_____

Place of birth (country/city):_____

Date of birth (dd/mm/yy):_____

Gender:□ Male   □ Female

Passport No: _____

Period of stay in China (dd/mm/yy): from _____ to _____

Place of applying for a visa (country, city):_____

Permanent residence (address):_____

Контрольные задания

Задание 1. Заполните анкету участника конференции.

Surname	
Name	
Middlename	
Academic title	
Working place	
Address	
Job title	
Article title	
Tel №	
Mob. №	
E-mail	

Form of participation (select from the list)

Не выбрано / Not selected ▾

Задание 2. Работа в парах. Подготовьте информацию для участия в конференции и обсудите ее с коллегой.

Ask for and give information about your participation in a conference/symposium/congress. Share your opinions about the organization of the conference, its agenda, the chairman's speech and the papers presented.

Тема 3. УЧАСТИЕ В ДИСКУССИИ (PARTICIPATION IN THE DISCUSSION).

Цели занятия:

1. Развитие умений ведения диалога-расспроса по теме «Участие в круглом столе, дискуссии», соблюдая нормы речевого этикета, принятые в стране изучаемого языка.

2. Развитие навыков и умений выражения собственного мнения.

3. Развитие навыков и умений монологической и диалогической речи, связанной с социальным и профессиональным общением: деловые встречи и участие в конференции, участие в круглом столе, дискуссии.

4. Развитие навыков и умений социального и профессионального общения с коллегами (открытие и завершение круглого стола, дискуссии, участие в дискуссии, обсуждение доклада).

Задание 1. Переведите словосочетания на русский язык.

to chair the session
to give a special welcome to
to attend the meeting
to consider the range of subjects
to schedule something for …
to schedule something for …
to reschedule
to promote something
to cancel something
to hold concurrently
a working group session
a poster session
a panel discussion
an agenda
an alternation to the agenda
a stimulating discussion

Задание 2. Представьте участника/ов конференции коллегам, используя выражения.

I have the great pleasure to introduce …
Our first guest will speak on …
And now I have the pleasure of introducing our first speaker …
I now give the floor to …
Our next speaker is … who will speak about/on …
Now I'd like to call upon … who is going to speak about/on …
And now I ask … to make his contribution on …

Now I'm giving the floor to … who will speak about/on …

Задание 3. Составьте диалог между участниками конференции, используя следующие предложения.

Please feel free to ask questions and make comments.
Any questions or comments?
Are there any questions on Mr. S's paper?
Does anyone want to ask questions to …?
Any other questions?
Do you have questions to ask?
Who would like to comment on Mr. M's paper?
Does anyone else want to ask a question or make a comment?
Are there any further comments on the paper?
There are no more questions … Thank you.

Задание 4. Подведите итоги конференции, используя следующие предложения.

I'd like to thank you all for a stimulating discussion.
Well, I think that covers everything.
All the topics seem to have been exhausted.
I think it's time we closed the discussion.
Our time is up. The discussion is closed.
I declare the session closed.
I think we have done a good job. Thank you all.

Задание 5. Прочитайте и попрактикуйте с коллегой участие в дискуссии или в работе круглого стола следующие полезные выражения.

Mr. Chairman, ladies and gentlemen, I am greatly honoured to be invited to this conference.
In this paper I would like to talk about the concept of …
The object of this paper is to show …
To begin with, let us imagine that …
As many of you know …
First of all I would like to …
I am sure I don't have to remind you that …
I am very pleased to have this opportunity to …
In my paper I want to highlight …
In the introduction to my paper I would like to …
I want to begin my presentation with …
Let me begin with …
The first thing I want to talk about is …

The subject that I will discuss is …

Задание 6. Используя примеры выражения собственного мнения, постройте диалог с коллегой по вашему докладу.

Agreeing Yes, indeed. I think you are entirely right. I agree that… That's just what I think.	**Disagreeing** I am arguing against… I would object just a little… I object to… I wish I could agree with you but…
Expressing surprise It is rather surprising… It is unbelievable… I am puzzled by… I wonder about… I find it hard to believe that…	**Expressing uncertainty** It seems unlikely that… I have doubts about… I am not at all sure about… I am not certain… I am doubtful whether… I have been rather puzzled by… I doubt it.
Making contribution In connection with … I would like to add … Let me add that… In addition, I would like to mention… I would add that…	**Calling attention** I want to point out that… I would like to note… I would like to stress the importance of… It is worth pointing out that… I would like to draw/ call your attention to…
Making assessment The paper raises an important question … This method is particularly important because… The paper demonstrates how important it is to… These results/ data are of particular interest.	**Starting a conversation** As far as I know… What I have in mind is that… **Making remarks** I'd like to make a comment on … I would like to comment on… I have a point to make. **Provoking arguments** Would you agree with…? There seems to be some contradiction between your points of view. Does that mean you think…?

Контрольные задания

Задание 1. Ответьте на вопросы.

1. What is the topic of the paper you are going to present?
2. Why are you interested in this particular topic?
3. Do you always prepare for presentations?
4. What recommendations for making oral presentations do you find most helpful?
5. Which ones do you always follow?

Задание 2. Представьте участников конференции и название их докладов.

You are a chairperson opening a Students' Annual Conference. To do it you are given five minutes.

Задание 3. Участие в работе круглого стола (работа в группах по 4-5 человек).

Some post-graduate students are sharing information about new approaches and developments in their research areas. They talk about the contributions made by other scientists and discuss publications available on their research problems.

Тема 4. ЭТИЧЕСКИЕ ПРИНЦИПЫ МЕЖКУЛЬТУРНЫХ КОММУНИКАЦИЙ (ETHICAL PRINCIPLES OF INTERCULTURAL COMMUNICATION)

Цели занятия:
1. Расширение знаний об этических принципах межкультурных коммуникаций.
2. Развитие навыков и умений общения на иностранном языке с учетом норм этикета.
3. Развитие навыков и умений перевода аутентичных текстов по теме «Этические принципы межкультурных коммуникаций».
4. Развитие навыков и умений чтения и понимания аутентичных текстов по теме «Этические принципы межкультурных коммуникаций».
5. Развитие навыков и умений выражения и аргументации своего отношения к прочитанному/прослушанному.
6. Развитие навыков и умений написания эссе по теме занятия.

Задание 1. Ознакомьтесь с информацией, предложенной в пособии
Исаева, Т.Е. Иностранный язык в сфере научного общения: тексты лекций / Т.Е. Исае-ва; ФГБОУ ВО РГУПС. – Ростов н/Д, 2017 на стр. 20-45.

Задание 2. Прочтите и переведите текст об этических нормах поведения, принятых у представителей той или иной нации.

A World Guide to Good Manners
How not to behave badly abroad

Traveling to all corners of the world gets easier and easier. We live in a global village, but how well do we know and understand each other? Here is a sample test. Imagine you have arranged a meeting at four o'clock. What time should you expect your foreign business colleagues to arrive? If they are German, they'll be bang on time. If they are American, they'll probably be 15 minutes early. If they are British, they'll be 15 minutes late, and you should allow up to an hour for the Italians.

When the European community began to increase in size, several guide books appeared giving advice on international etiquette. At first many people thought this was a joke, especially the British, who seemed to assume that the widespread understanding of their language meant a corresponding understanding of English customs. Very soon they had to change their ideas, as they realized that they had a lot to learn about how to behave with their business friends.

For example:
o The British are happy to have the business lunch and discuss business matters with a drink during the meal; the Japanese prefer not to work while eating.

Lunch is a time to relax and get to know one another, and they rarely drink at lunch time.

    o   The Germans like to talk business before dinner; the French like to eat first and talk afterwards. They have to be well fed and watered before they discuss anything.

    o   Talking off your jacket and rolling up your sleeves is a sign of getting down to work in Britain and Holland, but in Germany people regard it as taking it easy.

    o   American executives sometimes signal their feelings of ease and importance in their offices by putting their feet on the desk whilst on the telephone. In Japan, people would be shocked. Showing the soles of your feet is the height of bad manners. It is a social insult only exceeded by blowing your nose in public.

The Japanese have perhaps the strictest rules of social and business behaviour. Seniority is very important, and a younger man should never be sent to complete a business deal with an older Japanese man. The Japanese business card almost needs a rulebook of its own. You must exchange business cards immediately on meeting because it is essential to establish everyone's status and position.

When it is handed to a person in a superior position, it must be given and received with both hands, and you must take time to read it carefully, and not just put it in your pocket! Also the bow is a very important part of greeting someone. You should not expect the Japanese to shake hands. Bowing the head is a mark of respect and the first bow of the day should be lower than when you meet thereafter.

The Americans sometimes find it difficult to accept the more formal Japanese manners. They prefer to be casual and more informal, as illustrated by the universal "Have a nice day!" American waiters have one-word imperative "Enjoy!" The British, of course, are cool and reserved. The great topic of conversation between strangers in Britain is the weather-unemotional and impersonal. In America the great topic between strangers is the search to find Geographical link. 'Oh, really? You live in Ohaio? I had an uncle who once worked there."

In France you shouldn't sit down in a café until you've shaken hands with everyone you know.

In Afghanistan you should spend at least five minutes saying hello.

In Pakistan you mustn't wink. It is offensive.

In the Middle East you must never use the left hand for greeting, eating, drinking, or smoking. Also you should take care not to admire anything in your hosts' home. They will feel that they have to give it to you.

In Russia you must match your hosts drink for drink or they will think you are unfriendly.

In Thailand you should clasp your hands together and lower your head and your eyes when you greet someone.

In America you should eat hamburger with both hands and as quickly as possible. You shouldn't try to have a conversation until it is eaten.

Vocabulary

to be bang on time — прибыть как раз вовремя

widespread — широко распространненый

custom — обычай

take it easy — не торопитесь, не спешите, относитесь спокойно, принимайте близко к сердцу

executive — руководитель, администратор фирмы

feeling of ease — чувство непринужденности

to exceed — превышать, выходить за пределы

casual — небрежный

cool — хладнокровный, невозмутимый

tip — совет

to clasp — сложить

Задание 3. Ответьте на вопросы к тексту.

1. Which nationalities are the most and least punctual?

2. Why did the British think that everyone understood their customs?

3. Which nationalities do not like to eat and do business at the same time?

4. 'They (the French) have to be well fed and watered.' What or who do you normally have to feed and water?

5. An American friend of yours is going to work in Japan. Give some advice about how he/she should and shouldn't behave.

6. Imagine you are at a party in (a) England (b) America. How could you begin a conversation with a stranger? Continue the conversations with your partner.

7. Which nationalities have rules of behaviour about hands? What are the rules?

8. Why is it not a good idea to...

... say that you absolutely love your Egyptian friend's vase.

... say 'Hi! See you later!' when you're introduced to someone in Afghanistan.

... discuss politics with your American friend in a McDonald's.

Задание 4. Обсудите в ходе дискуссии следующие проблемы:

1. Do you agree with the saying 'When in Rome, do as the Romans do'? Do you have a similar saying in your language?

2. What are the 'rules' about greeting people in your country? When do you shake hands? When do you kiss? What about when you say goodbye?

3. Think of one or two examples of bad manners. For example, in Britain it is considered impolite to ask people how much they earn.

Задание 5. Напишите эссе на тему:

What advice would you give somebody coming to live and work in your country?

Контрольное задание.
Переведите отрывок текста по теме «Ethics of Intercultural Communication»

People from different cultures encode and decode messages differently, increasing the chances of misunderstanding. It is essential that people research the cultures and communication conventions of those whom they propose to meet to minimize the risk of making the elementary mistakes. When language skills are unequal, clarifying one's meaning in five ways will improve communication:

Avoid using slang and idioms, choosing words that will convey only the most specific denotative meaning.

Listen carefully and, if in doubt, ask for confirmation of understanding (particularly important if local accents and pronunciation are a problem).

Recognise that accenting and intonation can cause meaning to vary significantly.

Respect the local communication formalities and styles, and watch for any changes in body language.

Investigate their culture's perception of your culture by reading literature about one's culture through their eyes before entering into communication with them. This will allow one to prepare yourself for projected views of one's culture that will be borne as a visitor in their culture. If it is not possible to learn the other's language, show some respect by learning a few words.

When writing, the choice of words represent the relationship between the reader and the writer so more thought, and care should be invested in the text since it may be thoroughly analyzed by the recipient.

Тема 5. ОБРАЗОВАНИЕ В XXI ВЕКЕ (EDUCATION IN XXI CENTURY)

Цель занятия:

1. Развитие навыков и умений чтения и перевода аутентичных текстов по теме «Образование в XXI веке».

2. Развитие навыков и умений употребления в речи различных видовременных форм английского глагола.

3. Развитие навыков и умений написания эссе по теме занятия.

4. Формирование коммуникативной компетентности студентов.

Задание 1. a) Что обозначает слово «education»?

b) Прочитайте дефиниции данного слова.

Education – the process of receiving or giving systematic instruction, especially at a school or university (Oxford Dictionary).

Education – the process of teaching or learning, especially in a school or college, or the knowledge that you get from this (Cambridge Dictionary).

Education – a: the action or process of educating or of being educated; *also*: a stage of such a process. *b*: the knowledge and development resulting from an educational process (Merriam-Webster Dictionary).

Education – the wealth of knowledge acquired by an individual after studying particular subject matters or experiencing life lessons that provide an understanding of something. Education requires instruction of some sort from an individual or composed literature. The most common forms of education result from years of schooling that incorporates studies of a variety of subjects (Business Dictionary).

c) Используя данные дефиниции и свои собственные идеи, заполните спайдерграмму слова «education».
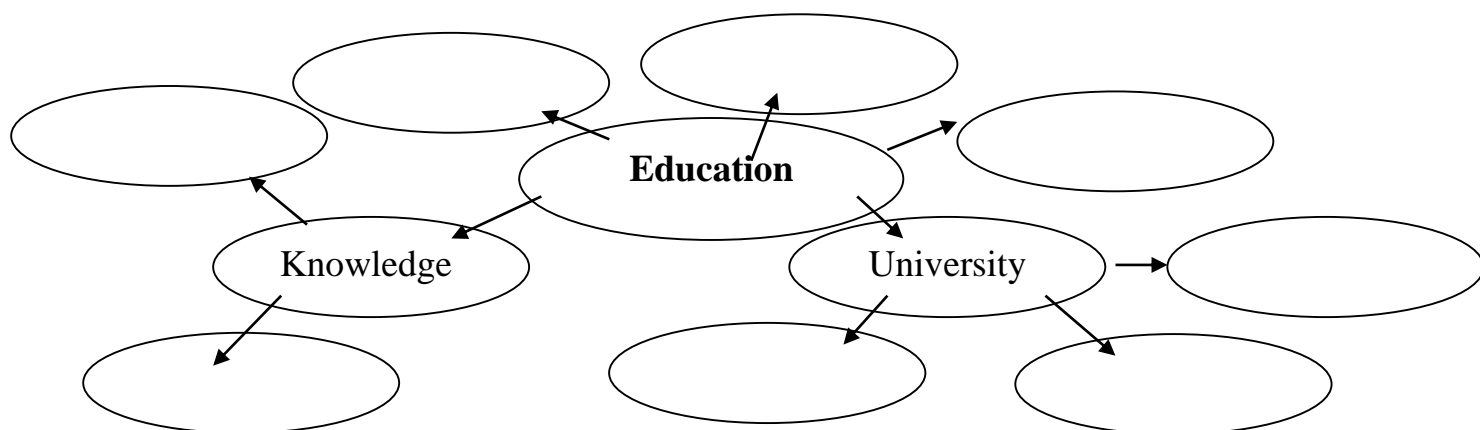
Задание 2. Прочитайте текст и составьте план к нему.

Historically, children were educated through life experiences; people learned from other humans. The basic notion of schools that all children would attend – a time and place to intentionally structure teaching and learning – came into existence in XVI and XVII centuries. Public schools are a product of the Age of Enlightenment, one of the institutions to cultivate reason and the capacity of people to improve their lives and build a better social order as a result of individual agency and collective efforts. Beginning in the 1850s in Europe and America, the concept of public education for all began to take hold, with the view that communities and governments should establish, fund, and support schools. This led to the development of "public education systems". After World War II, as a result of the inclusion of education as one of the Universal Human Rights in the Universal Declaration, much of the world saw governments around the world commit to education and literacy as a key part of economic and social transformation.

In XXI century the United States still has the best higher education in the world, though the rest of the world is catching up. While the U.S. previously produced 75% of all advanced degrees, particularly in science, it is now less than 25%. U.S. higher education hasn't stumbled so much as other countries see the importance of higher education and are investing heavily. Nowadays countries see education as the key to economic development. In particular, Singapore, Mexico, Finland, and China made clear that their countries see education as a key driver of national success. Education is seen as crucial to modernizing society and competing economically. As a result, education is on the agenda and a top priority in many countries.

Most countries are thinking about 21st century skills. The development of 21st century skills is a stated priority in the majority of countries. They think of these skills very similarly as the U.S. – focused on critical thinking, collaboration, creativity, and communication. Such skills are about thinking and problem solving, not rote memorization. All countries see the same need in order to develop competitive future workforces.

Countries are implementing education reforms. To develop 21st century skills and to strengthen their workforce, education reforms are widespread, with the support of government leaders and policies. These reforms include broader access to education, changes in curriculum, use of tools and technologies, and rethinking how teachers are selected, trained, and assessed. For instance, 30 years ago, education in China was simple and basic. Teachers taught via lectures, used strict frameworks and one set of text books. China has learned from other countries and now believes that education is a key to the country's modernization, culture, workforce, businesses, national defense, and the advancement of science and technology. National policies now prioritize education, call for transformation, and encourage experiments. Educators in China use multiple text books and multimedia, multiple instruction methods, including technology, and have completely overhauled the curriculum with new learning goals, processes, and methods.

Упражнение 3. Определите, в чем заключается основная идея текста. Используйте следующие выражения:

The central idea of the text / article is about ...
The text is devoted to ...
The text deals with ...
The text touches upon ...
The purpose of the text is to give the reader some information on ...
The aim of the text is to provide a reader with some material on ...

Задание 4. Соотнесите слово и его дефиницию.

1. literacy	a. to develop or improve by education or training
2. notion	b. a fact, thing or condition that is regarded or treated as more important than others
3. experience	c. the ability to read and write
4. to cultivate	d. promotion in rank or standing; preferment; development, improvement
5. skill	e. the total number of persons employed or employable
6. to compete	f. the ability, coming from one's knowledge, practice, aptitude, etc., to do something well
7. to improve	g. knowledge or practical wisdom gained from what one has observed, encountered, or undergone
8. workforce	h. to bring into a more desirable or excellent condition:
9. priority	i. a conception of or belief about something
10. advancement	j. to strive to outdo another for acknowledgment, a prize, supremacy, profit

Задание 5. Переведите на английский язык.

1. Государственные школы появились в эпоху Просвещения. Их целью было развитие способностей людей, улучшение их жизни и формирование нового социального устройства.

2. Концепт образования для всех получил широкое развитие в 1850-х годах в Европе и США.

3. После окончания Второй мировой войны право на образования стало одним из всеобщих прав человека.

4. В США самая лучшая система образования, хотя в настоящее время многие страны догоняют их.

5. Некоторые европейские и азиатские страны рассматривают образование как главную движущую силу национального успеха.

6. Главные навыки XXI века – критическое мышление, сотрудничество, творчество и общение.

7. Страны проводят образовательные реформы, включающие более широкий доступ к образованию, изменения в учебной программе, более активное использование инновационных технологий.

Задание 6. Заполните таблицу дериватами данных слов (где возможно)

Noun	Verb	Adjective	Adverb	Participle
	exist			
reason				
		broad		
		social		
				improving
education				
defense				
				solving
			importantly	
	critical			

Задание 6. Ознакомьтесь с грамматическим материалом.

Таблица образования времен английского языка (активный залог)

	Present	**Past**	**Future**
Simple	Формула: **V (+s)** + I work + He writes – I do not work – He does not write Do I work? Does he write?	Формула: **V2** + I worked + He wrote – I did not work – He did not write Did I work? Did he write?	Формула: **Will + V** + I will work + He will write – I won't work – He won't write Will I work? Will I write?
Continuous	Формула: **am/is/are + Ving** + I am working + He is writing – I am not working	Формула: **was/were + Ving** + I was working + He was writing	Формула: **will + be + Ving** + I will be working + He will be writing

	– He is not writing Am I working? Is he writing?	– I was not working – He was not writing Was I working? Was he writing?	– I won't be working – He won't be writing Will I be working? Will he be writing?
Perfect	Формула: **have/has + V3** + I have worked + He has written – I have not worked – He has not written Have I worked? Has he written?	Формула: **had + V3** + I had worked + He had written – I had not worked – He had not written Had I worked? Had he written?	Формула: **will + have V3** + I will have worked + He will have written – I won't have worked – He won't have written Will I have worked? Will he have written?
Perfect Continuous	Формула: **have/has + been + Ving** + I have been working + He has been writing – I have not been working – He has not been writing Have I been working? Has he been writing?	Формула: **had been + Ving** + I had been working + He had been writing – I had not been working – He had not been writing Had I been working? Had he been writing?	Формула: **will + have been + Ving** + I will have been working + He will have been writing – I won't have been working – He won't have been writing Will I have been working? Will he have been writing?

Таблица образования времен английского языка (пассивный залог)

	Present	*Past*	*Future*

Simple	Формула: **am /is/ are + V3** + I am made to conduct this experiment – Humorous books are not written by scientists Is space explored by NASA?	Формула: **was / were + V3** + The telephone was invented by Alexander Bell – We were not invited to that conference Was Large Hadron Collider constructed by Russian engineers?	Формула: **Will + V3** + The thesis will be completed next June. – The article will not be published next month. Will you be helped by anyone?
Continuous	Формула: **am /is/ are being + V3** + Nowadays the space is being actively explored – This matter is not being looked into anymore Are laboratory mice being watched these days?	Формула: **was/were being + V3** + I was being asked a question when you called me – I was being taught at home even when I was ill. Was this problem being discussed when you arrived?	–
Perfect	Формула: **have/has been + V3** + This letter has been signed by my scientific supervisor. – I am not going to the conference as I haven't been invited. Have the laboratory animals been fed today?	Формула: **had been + V3** + He decided to become a scientist only when his first article had been published. – By evening all preparations for the experiment had not been finished. Had the essay been written by the time she	Формула: **will have been + V3** + By the 1st of July the last experiment will have been conducted. – By the time you return the report won't have been written yet. Will everything have been prepared by 11

		returned?	o'clock?
Perfect Continuous	–	–	–

Задание 7. Раскройте скобки, поставив глагол в необходимую грамматическую форму.

a) Группа времен Present

1. Consequently, the percentage of plastics integrated in jet planes (to rise) steadily.

2. The scientists of Russian Academy of Sciences (to conduct) now experiments aimed at recognizing human speech.

3. For a long period of time educational establishments (to look for) various ways of offering courses who live far from cities and towns.

4. Lenses (to refract) the light rays from an object forming an image.

5. Tea and coffee drinkers (to have) a lower risk of developing type 2 diabetes.

6. Optical fibers, used in modern optical communication systems (to be) an example for the application of an advanced ceramic material

7. In his books Isaak Asimov (to write) about incredible machines of the distant future.

8. The development of the giant Airbus 380 (to take) the use of plastics to a new level. And for commodity manufacturers, plastic (to become) the material of choice for getting ahead of the competition

9. Many modern technologies (to require) materials with unusual combinations of properties that cannot be met by natural composites or the conventional metal alloys, ceramics and polymeric material.

10. For almost seven decades later, American scientists (to work) side-by-side with scores of Japanese colleagues at the Radiation Effects Research Foundation in Hiroshima.

b) Группа времен Past

1. Historians (to name) civilizations by the level of their materials development, e.g. the Stone Age (beginning around 2.5 million BC), the Bronze Age (3500 BC), and the Iron Age (1000 BC).

2. By the beginning of the network age Microsoft Corporation (to sell) software for individual PCs.

3. Stephen A. Benton (to invent) white-light transmission holography while he (to research) holographic television at Polaroid Research laboratory.

4. Hans Lippershey (to teach) Galileo Galilei of the invention of the telescope for almost two years since 1609.

5. Alexander Graham Bell (to patent) an optical telephone system by the end of XIX century.

6. After divers (to find) the wreck of the Titanic at a depth of about 13,000 ft in 1985, a 1996 expedition (to use) sonar imaging to discover it properly.

7. The Titanic (to sink) on her first trip across the Atlantic Ocean in 1912 after she (to hit) an iceberg. 1,513 of the 2,224 people on board (to die), mainly because there (to be) only 1,178 places in the ship's lifeboats.

8. During the experiment we (to place) the cubes into the space formed by six secondary anvils in the press.

9. Russian, Japanese and American scientists (to discover) four new elements in recent years. The elements (to get) the following names: Nihonium (Nh), Moscovium (Mc), Tennessine (Ts), and Oganesson (Og).

10. Looking at the figure, I (to notice) that the Fermi level (to move) towards the Dirac point. It (to indicate) that F4-TCNQ (to deposit).

c) Группа времен Future

1. Normally, a material having a high strength (to have) only a limited ductility

2. Next Conference *on Lasers and Electro-Optics (to take place) from 11 to 14 September.*

3. New ceramics (to permit) materials engineers to devise more efficient heat engines and lower friction bearings.

4. Plastic deformation is a non-reversible type of deformation, i.e. the material (not to return) to its original shape.

5. The 100 surface stations, 9 radiosondes and 3 UAS *(to make)* measurements before, during and after the eclipse.

6. I (to finish) my master thesis by the end of the semester.

7. Future development (to show) probably the replacement of weighty alloys by CFRP to allow for maximum payload.

8. The Earth *(to have)* a near-miss with an asteroid as big as the Rock of Gibraltar next week.

9. The successful applicants (to get) a degree in a biological *science* by the end of the two-year course.

10. This year the Commission *(to conduct)* a workshop on "Wood in Green Building", which (to be) additional technical content at its meeting.

Задание 8. Напишите эссе на тему «Перспективы и вызовы российского образования в XXI веке».

Задание 9. Составьте устную тему «Образование в XXI веке».

Контрольное задание

Раскройте скобки, поставив глагол в необходимую видовременную форму.

1. The term ceramic (to come) from the Greek word keramikos, which (to mean) burnt substance. 2. What field of science you currently (to work) or (to study) in? 3. Recently, scientists (to achieve) significant progress in understanding the fundamental character of these materials. 4. In the nearest future this technology (to make) robots a more effective substitute for animals. 5. Have you ever (to apply) for a job in science? 6. Ceramics (to be) more resistant to high temperatures and harsh environments than metals and polymers. 7. While I (to do) my project, I (to focus) on the creation of a new CD4 positive HeLa cell clone. 8. Max Planck (to make) many contributions to theoretical physics, but his fame as a physicist rests primarily on his role as the originator of quantum theory. 9. This January scientists (to discover) a new organ in the human digestive system. 10. By the end of the next week I (to complete) my report on the radiopaque materials. 11. Since 1985, it (to report) that HA coatings on metallic implants can successfully enhance clinical success. 12. The symposium (to hold) next September. 13. Basically, I (to do) some reading on the Namib Desert Beetle since May. 14. In each experimental run, data collection (to take place), followed by data analysis. 15. Murray Gell-Mann and George Zweig (to propose) that particles such as protons and neutrons (not to be) elementary particles, but instead (to be) composed of combinations of quarks and antiquarks. 16. The journal (to contact) l probably you to say they (to receive) your article.

Тема 6: РОЛЬ УНИВЕРСИТЕТОВ В СОВРЕМЕННОМ ОБЩЕСТВЕ (THE ROLE OF UNIVERSITIES IN THE MODERN SOCIETY)

Цели занятия:

1. Развитие умений и навыков поискового чтения аутентичного текста по теме «Роль университетов в современном обществе».

2. Развитие навыков и умений чтения и анализа научной информации, представленной в диаграмме.

3. Развитие навыков и умений ведения диалога-расспроса по теме «Роль университетов в современном обществе».

4. Развитие навыков и умений написания деловой документации (мотивационное письмо в университет).

5. Развитие навыков и умений монологической речи.

6. Развитие самообразовательного потенциала молодежи с учетом многообразия современного многоязычного и поликультурного мира.

Задание 1. Ответьте на следующие вопросы.

1. What famous universities do you know?
2. What are they famous for?
3. What is the oldest Russian university? When was in founded?
4. Do you know Russian transport universities?
5. What is the role of higher educational establishments in the up-to-date society?

Упражнение 2. Прочитайте заголовок и выскажите предположение о содержании текста.

The Role of Universities as Anchor Institutions in the USA

In the past quarter century, universities have committed themselves to greater engagement in the country. They are increasingly seen as "anchor" institutions, whose physical presence is integral to the social, cultural, and economic wellbeing of the USA. American universities have recognized the many challenges, but still they are broadening the education of students, improving neighborhoods and cities, helping strengthen other anchor institutions, and informing and advancing the USA society.

Institutions of higher education are key generators of human capital, educating about 20 million students annually. Of the 7,473 institutions of postsecondary education in the United States, 4,961 (68 %) are located in urban areas and educate over 67 % of all postsecondary students in the United States. In the 2015-2016 academic year, they granted 63 % of all bachelor's degrees, 75 % of all master's degrees, and over 72 % of all PhDs among universities in the United

States. Furthermore, urban universities educate more than 80 % of all the doctors and dentists. Universities are often their cities' largest employers and a significant economic engine. In 2015-2016, urban degree-granting institutions employed 2.6 million employees, with over 1.9 million full-time equivalent staff, paying over $190 billion in salaries, wages, and employee benefits. They had total annual expenses of $340 billion, total annual revenues of $405 billion, and total assets worth over $700 billion.

In fall 2015, a record 21.5 million students attended American universities, constituting an increase of 6 million since fall 2000. Over 70 % of these enrollees were at public institutions of higher education – with nearly 15.24 million attending public two-year institutions, 3.95 million attending private not-for-profit institutions, and about 2.38 million enrolled at private for-profit institutions.

Four-year public institutions, despite seeing a sharp reduction in state appropriations of 19 % over the past five years, have maintained an average annual price for undergraduate tuition, fees, room, and board of $16,789, as compared to the tuition, fees, room, and board of $37,906 at private nonprofit four-year institutions, and $23,364 at private for-profit four-year institutions.

Universities play an important role as a source of fundamental knowledge, as well as industrially relevant technology and inventions. In the academic year 2015-2016, the average university submitted 59 inventions, filed 50 patents, had 17 active licensing agreements, netted $2.5 million in income from royalties, and spent $1 million on technology transfer activities.

(Adapted from A Report of National Data and Survey Findings, 2016)

Задание 3. a) Прочитайте текст и найдите английские соответствия данным словам.

благосостояние, вызов, расширять, человеческий капитал, ежегодно, учебный год, экономический двигатель, доход, имущество, абитуриент, некоммерческий, резкое сокращение, ассигнование, лицензионное соглашение, финансовые отчисления.

b) Составьте собственные предложения с данными словами.

Задание 4. Согласно тексту, являются ли данные предложения истинными (Т), ложными (F) или в тексте ничего не сказано (D).

1. In the last fifteen years American universities are considered to be "anchor" centers of learning.
2. The major roles of the universities are to educate students, transform the society and increase the wellbeing of the American nation.
3. Universities are crucial distributors of human capital.
4. About 70 % of American universities are located in the urban areas of the West states.

5. In 2015-2016 urban universities granted fewer bachelor's degrees than other universities in the USA.

6. Urban universities don't educate doctors and dentists.

7. More than 0.19 trillion are usually spent on salaries, wages, and employee benefits.

8. The majority of American students study at private for-profit institutions.

9. The government take a bill that the reduction of appropriations should be 19 % each year.

10. In 2015-2016, as a rule every institution of higher education introduced about 60 inventions.

Задание 5. Прочитайте текст и дополните предложения.

1. Recently American universities have faced a lot of ...
a) troubles   b) problems   c) challenges   d) achievements
2. Higher educational establishments educate about 20 million students...
a) yearly   b) every semester c) once a decade   d) biennial
3. A sharp ... in state appropriations is equal to 19 %.
a) increase   b) reduction   c) donation   d) growth
4. About 15 million of US student are ... public two-year institutions.
a) attending   b) visiting   c) going   d) taking course
5. Urban degree-granting institutions ... about 2.5 million workers.
a) employed   b) provided   c) paid   d) found

Задание 6. Выпишите из текста названия различных типов высших учебных заведений в США.

Задание 7. Посмотрите на диаграмму и сравните причины, по которым американские и канадские и студенты решили поступить в университет.

Reasons for entering the university

American Students   Canadian Students
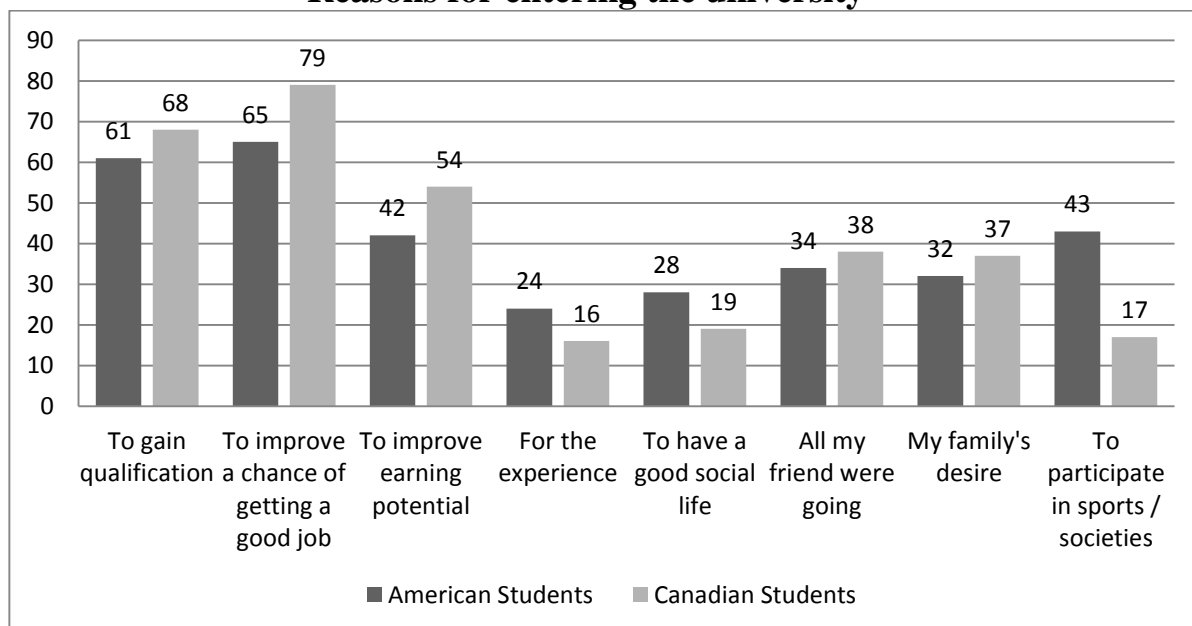
Пример. Only 24 % of American and 16 % of Canadian students say that one of the important reasons for them wanting to go to university is "for the experience", though this valuable experience includes moving away from home, living independently, meeting new people and building new relationships.

Используйте полезные выражения:
A large / small number of students ...
There were similar / various responses ...
These results are significantly different / influenced / similar
Students are more likely to have been motivated by ...
In contrast, ... % of students ...
The vast majority ...
A minority of students ...
There is also an interesting contrast between ...
This number / amount / percentage indicates that ...
The most popular answer was ...

Задание 8. Работа в парах. Спросите Вашего одногруппника о причинах, побудивших его стать студентом.

1. What is the main reason that you decided to go to university?
2. Who was a key influence on your decision to go to university?
3. Did you apply for one or several higher educational establishments? What were they?
4. Were you motivated to choose the university because it was close to home?
5. Was the academic reputation of the university a key influence to you?
6. Why did you choose exactly this course / specialty?

Задание 9. Прочтите и переведите мотивационное письмо.

Motivation letter for Master in Computer Science

Dear Sir /Madam,
First of all, let me introduce myself, I am George Baker and recently I have been working in Freetelecom as a Network Engineer. I have attended my bachelor degree in Computer Science and Engineering from Bristol University.

The undergraduate curriculum in Computer Science and Engineering at institute of technology, Bristol University, introduces me to a wide variety of engineering subjects. Various courses like Artificial Intelligence (Robotics), Programming Languages, Electronics I&II, Software Engineering, Network and System Security, Digital system, Algorithm analysis and design, Computer

graphics and multimedia, etc. provided me with a strong footing in the theoretical concept of Computer Science and Engineering.

While offering both depth and breadth across this field, these courses put into perspective the importance and relevance of Computer Science and Engineering and the application of its fundamentals to the problems faced by the real world. So, I can realize that learning and developing my knowledge of Computer Science. I will have a great contribution to the society since the whole world is transferring manual system to computerize.

I am much eager to adopt and know new technologies. I am really enthusiastic to attend a Master of Computer Science in order to understand different Computer Science Concepts, because every industry needs the concept of Computer Science. Good reputation of high quality education standards, an extremely distinguished faculty members and research facilities are the factors which have motivated me to choose for my M.Sc. studies Yale University.

Moreover, I feel I am responsible for making a big move in this field and this scholarship will give me a big chance to be one day someone who is remembered for his innovations. I think it is our duty as people sharing life in this world to make our future better because the future is not only ours. Our grandchildren should be proud of us one day when they look back and find how hard we worked to make the world a better place. I believe my qualification and your needs would be an excellent fit. I will be happy to provide any further information or documents if required. I look forward to your positive response. Thank you for your time and consideration.

Yours faithfully,
George Baker

Vocabulary

to attend bachelor degree – получить степень бакалавра
curriculum – учебный план
wide variety – широкий выбор
Artificial Intelligence – искусственный интеллект
to realize – осознавать
strong footing – прочная основа
to put into perspective – рассматривать в перспективе
scholarship – стипендия
contribution – вклад, содействие
research facilities – исследовательские учреждения
to be an excellent fit – идеально подходить

Задание 10. Напишите собственное мотивационное письмо в магистратуру.

Plan

1. Introduction.

2. Previous educational background

3. Objectives and goals you are planning to achieve

4. Which of the qualities, skills and knowledge required for the desire university course and your future career, you have already had and which you need to develop.

5. In what way you may be interesting / useful to university and fellow students.

6. Conclusion.

Задание 11. Составьте устную тему «Роль университетов в современном обществе».

Контрольные задания

Прочитайте тексты A-F и соотнесите с утверждениями 1-7. Обратите внимание, одно утверждение является лишним.

1. The text says that this university educates students in subjects referring both to the past and the present.

2. The text says that this university educates scientists and authors better than any other in the country.

3. The text says that this university appeared in the middle of XV century.

4. The text says that the library of this university has no rivals in a certain part of the United Kingdom.

5. The text says that at this university only two students out of three are British citizens.

6. The text says that this university's graduate made his alma mater a generous gift.

7. The text says that this university was reorganized.

A. The University of Cambridge is proud of its museum. The museum was founded by Richard, seventh Viscount Fitzwilliam of Merrion in 1816 and is called after him. The founder presented his famous art collection and library to the University (where he had taken his degree nearly fifty years earlier). He also gave the University £ 100,000 to provide a building for his collection. Many of the best paintings we can see in the Fitzwilliam Museum used to belong to this outstanding man.

B. As the oldest university in the English-speaking world, Oxford is a unique and historic institution. There is no clear date of foundation, but teaching existed at Oxford in some form in 1096 and developed rapidly from 1167, when Henry II banned English students from attending the University of Paris. In 1878 Oxford opened its doors for women. Nowadays the university's student population

is over 20,000. It consists of students from more than a hundred and forty countries and territories. Over a third comes from outside the UK.

C. The University of Aberdeen is one of the ancient universities. It is the third *oldest* university in Scotland and the fifth *oldest* in the British Isles. It was founded in Old Aberdeen, Scotland. It started as King's College in February 1495, but in April 1593 the second university, Marischal College, was founded in the city. It was highly unusual at that time to have two universities in one place. In 1860 two colleges were finally united into the University of Aberdeen.

D. St. Andrews is Scotland's first university and the third oldest in the United Kingdom. It was founded in 1413. Over six centuries it has established reputation as one of centers for teaching and research. The academic schools and departments of the University include: Art, History, Biology, Chemistry, Classical Studies, Ancient History, Greek, Latin, Economic and Finance, Computer Studies, English, Geography and Geostudies, Modern languages and others.

E. The University of Edinburgh was founded in 1583. It has the largest library in Scotland that includes more than a million books, about 600,000 electronic books, and 20,000 e-journals. It has 20 laboratories. Many of its graduates are well known all over the world. Some of them are Charles Darwin, a scientist, Sir Arthur Conan Doyle, a writer, Joseph Black, a chemist.

F. The University of Glasgow is located in the west end of the city. This university was founded in 1451 and is the fourth oldest in the United Kingdom. It is also one of the country's most prestigious. Its library is one of the oldest in Europe and has about 2 million volumes. The University has about 16,000 students, 2000 of which are from abroad.

Тема 7: ПРОДОЛЖЕНИЕ ОБРАЗОВАНИЯ В УНИВЕРСИТЕТЕ (POSTGRADUATE STUDIES)

Цели занятия:

1. Повторение ранее изученной и изучение новой лексики по теме «Продолжение образования в университете».

2. Развитие умений и навыков перевода аутентичных текстов по широкому кругу специальности.

3. Развитие умений и навыков изучающего чтения аутентичного текста по теме «Продолжение образования в университете».

4. Развитие умений и навыков поискового чтения аутентичного текста по теме «Продолжение образования в университете».

5. Развитие навыков и умений анализа текста, выявления проблемы и основной идеи.

6. Развитие навыков и умений монологической речи.

7. Развитие самообразовательного потенциала обучающихся, ориентирующих на саморегулирование дальнейшего образования и профессиональную мобильность.

Задание 1. Сопоставьте словосочетания из первого столбца с переводом на русский язык из второго столбца.

science	аспирант, магистрант
mathematical sciences	присвоить степень
dissertation/ thesis	общественные науки
natural sciences	научный доклад
scientific article	научный
degree	естественные науки
exact sciences	научная работа
get/take/receive a degree	наука и техника
scientific	иметь степень
scientific work	научный принцип
scientific paper	диссертация
Arts/ humanities	точные науки
social sciences	научное исследование
to defend one's thesis	математические науки
scientific research	научный подход
First degree/ Bachelor's degree	тема исследования
science and technology	защитить диссертацию
to hold/have a degree	научное общество
scientific principle	наука
research subject/ topic	научный метод
scholar	получить степень
scientific approach	степень (ученая)

field of study	ученый (естественные науки)
scientist	заниматься исследованиями
scientific method	ученый (гуманитарные науки)
Master's degree	Диплом/степень бакалавра наук
scientific society	кандидат психологических наук
Candidate of psychology	степень магистра
to be engaged in research	доктор филологических наук
to award/confer/ give a degree	область исследований
to do/carry out /conduct research (on/in/into)	степень доктора
Doctor of Philology	гуманитарные науки
postgraduate student/ research student	научная статья
doctoral degree/ doctor's degree	проводить исследования (по)

Задание 2. Составьте словосочетания (прилагательное + существительное, существительное + существительное) из первой и второй колонки.

social	society
	research
	approach
mathematical	sciences
	work
	method
scientific	institute
	principle
	journal
research	article
	center
	student
natural	topic
	career
	experiment

Задание 3. Составьте словосочетания (глагол + существительное) из первой и второй колонки.

to carry out	a degree
to conduct	
to be engaged in	
to award	

to receive	thesis
to defend one's	
to hold	
to submit	
to be awarded	research
to take	
to be admitted to	
to get	

Задание 4. Прочитайте текст и переведите его на русский язык.

Academic Degrees Abroad

There are different levels of higher academic education in Russia, providing for the following degrees: Bachelor's degree, Specialist's degree, Master's degree. There is also the highest professional training such as postgraduate courses, providing for scientific activity. So the degrees granted upon the successful completion and thesis defense are Candidate`s Degree and Doctor's degree. There are other forms of postgraduate courses training such as postgraduate military courses, internship and assistantship.

As for academic degrees abroad they differ in many ways from those in our country. Also there exists diversity of degrees in various countries. An academic degree is a title conferred upon an individual by college or university trustees and faculty that officially recognizes completion of a prescribed academic curriculum undertaken at the undergraduate or graduate academic level. Academic degrees include undergraduate degrees such as Bachelor's degree and higher or further degrees.

As for graduate education, it falls into the following categories: master's degree education, intermediate graduate awards and post-baccalaureate certificates, professional degree education, research doctoral degree education and postdoctoral training.

The term "degree" means an academic qualification awarded on completion of a higher education course or a piece of research. A first degree is usually known as Bachelor's degree, the others are called a higher/further degree, doctorate and so on. There are some similarities in degrees among certain groups of countries.

The principal types of academic degrees can be distinguished. The words "bachelor", "master", and "doctor" represent different levels of academic achievements. The naming of degrees is usually linked with the subject studied, for example, arts is used for the humanities, science - for natural and exact sciences.

The oldest and best known academic degree is the Bachelor's Degree. Some varieties of it include Bachelor of Arts (BA) degree and Bachelor of Science (BSc). Other baccalaureate degrees in most universities are Bachelor of Business

Administration, Bachelor of Education, Bachelor of Music.

The Bachelor's degree usually requires at least three years of full-time study, passing the university examinations, or in some cases other examinations of equivalent level. People can become BA, BSc at the age of at least twenty-one. But first degrees in medicine require six years of study, some others need four.

Bachelors' degrees are usually awarded on the basis of the results of several three-hour examinations and practical work or essays or dissertations. Students in subjects such as engineering have to spend several periods during their degree courses away from their academic studies, in industrial location in order to get practical experience. Students who are learning foreign languages usually spend a year in a country where those languages are spoken.

Degrees can be classified: first-class or honours degrees, second-class, and third class degrees, or pass without fail. A person studying for a degree at a British university is called an undergraduate.

Students can continue to study for degrees of Master (of Arts, Science, Business Administration, Education, Music, Philosophy, etc.). About 45 varieties of Master of Arts and 40 varieties of Master of Science degrees exist. The degree of Master requires one or two further years of study, with examination papers and substantial dissertation. The abbreviation "Hons" indicates Bachelors' and Masters' degree "with honours", or "with distinction".

The most advanced degree of Doctor of Philosophy (Phd) or Doctor of Science (DSc) requires preparing theses which must make original contributions to knowledge. Abbreviations DSc and ScD both stand for the doctorate of science and contain the level and the faculty or discipline.

In many countries there are two distinct types of Doctor's degrees: practitioner or professional`s degrees, and research degrees.

The former means advanced training for the practice of various professions, for example, in medicine and law, such as Doctor of Pharmacy, and Doctor of Jurisprudence. These degrees provide for implication of advanced research.

The research doctorates represent pro-longed periods of advanced study, usually at least three years beyond the baccalaureate. Besides they are accompanied by a dissertation which can be a substantial contribution to the advancement of knowledge. The most important of Doctor's degrees is the Doctor of Philosophy.

The other highest research degrees include the Doctor of Sc. Education (Ed.D.), the Doctor of the Science of Law and the Doctor of Business Administration.

Задание 5. Найдите в тексте задания 4 эквиваленты данных слов и словосочетаний.

Ступень, образование, степень, присуждать квалификацию, завершение курса обучения, исследование, основные типы, различать, академические достижения, связан с изучаемым предметом, точные науки,

бакалавриат, требуется три года очного обучения, присуждается на основе результатов экзаменов, на месте расположения промышленных предприятий, получать практический опыт, диплом/степень с отличием, студент университета, с отличием, подготовить диссертацию, внести вклад, продвинутый курс обучения, докторантура.

Задание 6. Предложите перевод словосочетаний из текста задания 4 на русский язык.

Academic education, diversity of degrees, academic qualification, completion of a higher education course , a piece of research, a higher/further degree, similarities, distinguish, academic achievements, arts, humanities, natural and exact sciences, Bachelor of Arts, Bachelor of Science, pass the university examinations, require six years of study, awarded on the basis of the results, essays, degree courses, pass without fail, the most advanced degree, original contributions to knowledge, abbreviations stand for, two distinct types of degrees, professional`s degrees, research degrees, implication of advanced research, prolonged periods of advanced study, beyond the baccalaureate, advancement of knowledge, Doctor of Philosophy.

Задание 7. Выделите в тексте задания 4 информацию, отражающую требования к получению академических и ученых степеней.

Задание 8. Задайте 10 вопросов разных типов по содержанию текста задания 4.

Задание 9. Передайте содержание текста на английском языке, используя изученную лексику.

Научный статус ученого характеризуется несколькими показателями, такими как степень, звание, место работы, занимаемая должность (position), специальные награды (awards) и звания (degrees), членство (membership) в различных ассоциациях.

Важнейшим показателем научной квалификации является степень. В англоязычных странах степень бакалавра называют первой степенью. Она предполагает успешное окончание (graduation) трех-, четырехлетнего курса обучения в высшем учебном заведении. Выпускники (graduates) российских вузов с четырехлетним циклом обучения, сдавшие государственные экзамены, получают диплом бакалавра.

При продолжении занятий после получения первой степени обучающиеся называются магистранты (graduate/postgraduate students). Получение этой степени требует года или двух лет учебы и участия в исследовательской работе. Претенденту необходимо сдать ряд экзаменов и

защитить диссертацию (thesis). Современная система образования в России имеет аналогичный уровень образования.

Следующая степень в англоязычных странах – это степень доктора философии, которая присуждается представителям как естественных, так и гуманитарных наук. Слово " Philosophy" изначально имело общее значение «наука вообще». К работе над докторской диссертацией исследователь может приступить после получения степени магистра в рамках специальной учебной программы (Ph. D. program/studies). Он должен осуществить научное исследование, сдать ряд экзаменов и представить к защите диссертацию. Степени магистра и доктора часто называют сочетанием advanced /graduate /higher degree.

Не следует путать профессиональную и исследовательскую степень. Наличие профессиональной степени означает, что данный специалист имеет квалификацию, отвечающую требованиям профессиональной ассоциации. Это чаще всего обозначает, что он получил степень бакалавра и продолжил обучение в профессиональном учебном заведении (юридической школе/law school, медицинской школе/medical school и интернатуре /internship). Профессиональные степени в англоязычных странах скорее эквивалентны российским дипломам врачей и юристов, чем степеням кандидатов и докторов медицинских и юридических наук.

Человек может быть обладателем профессиональной и ученой степени, например, Doctor of Medicine (M.D.) и Doctor of Philosophy (Ph.D.).

В англоязычных странах есть также ряд почетных докторских степеней (honorary/higher/senior doctorates), присуждаемых за долголетнюю и плодотворную научную деятельность. Они не требуют написания диссертации и присуждаются по совокупности заслуг деятелям науки, например, Doctor of Science, Doctor of Laws и другие.

Задание 10. Прочитайте текст. Ответьте на вопросы. Выявите главную мысль каждого раздела и основную идею текста.

English Degrees

The English system of degrees is rather complicated, and can be puzzling to foreigners.

First Degrees

A first degree is usually awarded at the end of a three-year course in higher education establishment. In most institutions the awarding of this degree depends on the final examination. But some institutions can demand a dissertation too.

A first degree is called a Bachelor's degree, and the name of the degree is followed by the name of the faculty. So a first degree in the faculty of arts is usually called a Bachelor of Arts, in the faculty of science it is a Bachelor of Science. These degrees are often referred to by their initials, both in speech and writing: for example BA, BSc.

There are two levels of Bachelor's degrees: Honours and General/Pass. Honours degree can be awarded after a more specialised course or they are given to those students who are more successful in their examinations.

Honours is abbreviated to Hons, for example, BA (Hons).

Higher Degrees

A higher degree is awarded after further study, usually involving research. Academic degree applies to all degrees, including first degrees. Higher degrees can be also called further degrees. Research degree means a degree involving research, and not all higher degrees are research ones. It is not an exact synonym of higher/further degree. There are two types of higher degrees: Master's degree and Doctor`s degree.

Master's degree

Originally this degree was awarded on acceptance of a thesis based on research, usually conducted after graduation. It was referred to either as an additional qualification for a profession, or as an introduction to real research work, for example, on a doctoral thesis. Now the Master's degree can be an advanced examination degree, rather than a degree by thesis. It is awarded after a year's postgraduate course of study. A Master's degree in the faculty of science is called Master of Science (MSc).

In some universities there exists a new Master's degree, the Master of Philosophy, or the MPhil. This name is used for all faculties. An MPhil thesis usually contains original material of a lower standard than the PhD.

Doctorate

Doctor of Philosophy or a PhD is awarded on acceptance of a thesis which must be an original contribution to knowledge. The name is the same for all faculties. Research for this degree can take about three years, but the length of time needed varies according to the subject.

There is another type of doctorate, which is called a senior doctorate in order to avoid confusion with PhD. The name of a particular senior doctorate depends on field of specialisation. These degrees are much higher than the PhD, and they can be comparable in importance to the Russian doctor's degree. But they do not involve the writing of a thesis. They require submitting published works to a board, or committee, who then decide whether these works could justify the award of the degree.

Awarding Higher Degrees by Thesis

The candidate applying for the degree submits his thesis to an examining board or committee consisting of professors and lecturers, one for each subject and two or three specialists in the candidate's field. They read the thesis and then summon the candidate to an oral examination (or a viva) on his thesis, and on other related topics. The examiners either accept or reject the thesis.

1. What is a first degree in Britain called?
2. When is a first degree awarded?
3. What does the awarding of the first degree depend on?

4.   What levels of Bachelor's degrees are there? What is the difference between them?

5.   What types of higher degrees are there?

6.   What are the reasons for awarding the Master's degree?

7.   Which way can a Master's degree in the faculty of arts called?

8.   What is the name of the doctoral degree for all faculties?

9.   How long can research for the doctoral degree take?

10.   Who reads the thesis before awarding higher degrees?

Задание 11. Вспомните, что Вы уже изучали о системе образования в России. Ответьте на вопросы.

1.   What types of higher education institutions are there in Russia? What are the differences between them?

2.   What levels of higher education are there in Russia?

3.   What academic and scientific degrees and titles are there in Russia?

4.   What are the requirements for receiving degrees?

Задание 12. Прочитайте текст и переведите его на русский язык. Дополните свои ответы на вопросы задания 11.

Higher education in the Russian Federation

There are both public and private higher education institutions in Russia, some of them have branches and representative offices across the country and abroad (mainly in CIS countries). There are five types of higher education institutions.

1.   Federal university is a leading higher education institution and centre of research at federal level. There are nine federal universities that were established through the merger of regional universities.

2.   National Research University is a recent higher education institution integrating regional research activities. There are 29 universities of such a kind.

3.   University is a higher education institution offering a wide range of programmes in many disciplines.

4.   Academy is a higher education institution delivering diverse programmes in a certain area (e.g. agriculture, arts, health etc.).

5.   Institute is an education institution which trains specialists for a specific profession.

Higher education establishments deliver Bachelor, Master and Doctoral programmes as well as traditional one-cycle higher education programme (specialist programme), leading to Bachelor, Master, candidate of sciences degrees and specialist qualifications respectively. The duration of the programmes is: four years for Bachelor, two years for Master, three years for full-time postgraduate programmes (the postgraduate degree is known as the 'candidate of sciences'

which is compatible with the Doctoral degree of Western education systems), five-six years for one-cycle traditional programmes, depending on the area of training. At postgraduate level there are programmes preparing candidates of sciences (compatible with the Doctoral level in international terminology). The type of postgraduate education may vary from fulltime to individually-tailored programmes. The latter can be undertaken by individuals who are working in parallel to doing research. Postgraduate programmes include both taught courses and independent research. These study programmes comprise teaching practice and participation in research, conferences, seminars and workshops. The supervision and assessment procedures for such studies consist of annual postgraduate assessment. Assessment committees are appointed by the higher education institutions themselves. Leading higher education institutions have special dissertation boards in charge of awarding scientific degrees (both for candidates and doctors of sciences).

Currently the national classification of professional training is being updated due to the transition to the two-cycle structure of higher education. The content of all programmes and qualifications is also being updated for the same reason and thanks to the introduction of competence-based education standards and curricula aimed at ensuring international compatibility. The two-cycle system, compatible with the Bologna requirements, has been mandatory in 2011 with the exception of traditional specialist curricula.

(European Commission: EACEA– Education, Audiovisual and Culture Executive Agency.

http://eacea.ec.europa.eu/TEMPUS/participating_countries/overview/russia_country_fiche_final.pdf)

Задание 13. Изучите **возможные** варианты перевода на английский язык степеней, званий, должностей, используемых в академической и научной сферах. Учтите, что многозначность перевода связана с различием структуры учебных и научных организаций в России и за рубежом. Ориентироваться следует на схожие функции, выполняемые подразделениями или специалистами в России и англоязычной стране.

русский вариант	английский вариант
диплом	degree, undergraduate degree
документ, полученный в результате изучения короткого курса в университете	diploma *(получение diploma в конце обучения менее почетно, чем получение degree)*
дипломная работа	graduation paper
дипломный проект	graduation project
защита (дипломной работы)	thesis defence, viva voce, viva
выпускной экзамен, государственный экзамен	graduation examination, final/ oral examination, viva
диссертация на соискание	dissertation, thesis

степени магистра, доктора в англоязычных странах	
актуальный	relevant, urgent, pressing, topical
актуальность	topicality
кандидат наук *(отсутствует в английской системе образования, при использовании этого термина необходимы пояснения, например, что эта степень эквивалентна степени доктора наук)*	candidate's degree, candidate of sciences, Doctor of sciences *(следует использовать с соответствующими пояснениями)*
соискатель степени доктор наук	doctoral candidate
аспирант, магистрант	graduate (амер.), postgraduate (брит.) student
аспирантура	post-graduate course/study
аспирант	doctoral student
ученая степень	higher degree
исследовательская степень	research degree
профессиональная степень *(для специалистов определенной квалификации)*	professional degree
исследователь, претендующий на получение докторской степени	research assistant, research associate
исследователь с докторской степенью	postdoctoral research associate
исследователь, который выполняет научную работу одновременно с повышением своей научной квалификации	research fellow
профессор	professor/full professor
доцент	reader, principal lecturer, senior lecturer, associate professor
старший преподаватель	lecturer, assistant professor, senior instructor
ассистент	assistant lecturer, instructor
заведующий кафедрой	head of department
кафедра физики	department of physics
пост заведующего кафедрой	chair
факультет	faculty (амер.), college/school (брит.)
декан	Dean
заместитель декана	sub-dean, associate dean, assistant dean
преподавательский состав	faculty (амер.), academic/teaching staff (брит.)

глава университета	Chancellor (брит.)
фактический руководитель университета, ректор	Vice-chancellor (брит.), President (амер.), Rector
проректор	prorector, vice rector, deputy vice-chancellor
проректор по учебной работе	Vice-president /prorector for academic affairs
проректор по научной работе	vice-president / prorector for research
проректор	provice-chancellor
младший научный сотрудник	scientific associate, research associate, research scientist
старший научный сотрудник	senior scientific associate, senior research associate, senior research scientist
член академии наук	member of the Russian Academy of Science
член-корреспондент	corresponding member
действительный член	full member/ academician
руководитель (научный)	supervisor

Задание 14. Переведите предложения на русский язык, учитывая изученную лексику.

1. A degree is an academic qualification awarded on completion either of a higher education course (a first degree) or a piece of research (a higher/further degree).
2. In 1995 he was awarded his Doctor's degree.
3. She has got a first/undergraduate degree.
4. Students who get first-class degrees are usually given the opportunity to stay on and to do research.
5. In Britain "to graduate" generally means: to complete a first degree course and the examination.
6. Research workers at British universities are divided into two grades, usually called research associates and senior research associates. Some institutions use assistant instead of associate.
7. A research fellow is a postgraduate who has been awarded a research fellowship, that is a special scholarship to do research for a certain period. I have just completed my master's degree in science.
8. I'm going to begin my Ph. D. program next September.
9. I have a candidate's degree which corresponds to the Ph.D. degree in your country.
10. Now I am a doctoral candidate in economics.

11.   He has a degree which we call Doctor of Medical Science degree. It is our senior research doctoral degree in this field.

12.   She is a botanist and a professor of ecology. She has what we call a fifty- fifty appointment. She teaches undergraduate and graduate students, and then the remaining time is taken up with research.

13.   White B. is Reader in Criminal Law, University of Strathclyde.

14.   Johnson W. is Principal Lecturer in Criminal Law in Liverpool University.

15.   White A. is Associate Professor of Economics in the University of Alaska.

16.   Now he occupies the position of docent which corresponds to associate professor or reader in your country.

17.   A ceremony at which degrees are officially awarded is sometimes called degree ceremony or a graduation ceremony. Diplomas and certificates are not usually awarded at special ceremonies.

18.   The word degree alone generally implies a first degree, other degrees being referred to more specifically, as higher/further degree, doctorate, and so on.

19.   A diploma differs from a degree in that it is usually vocational, or considered to be of a lower academic standard. It is awarded by a non-university institution, or if by a university, after a shorter course of study.

20.   Certificate is a very general word denoting any document which officially certifies something, e.g. birth certificate, marriage certificate and medical certificate.

21.   Degree course is a course of study which prepares students for a first degree; so degree examinations are often called finals in non-formal style.

Задание 15. Пользуясь изученной лексикой, изложите свои аргументы в пользу продолжения образования в магистратуре/асприрантуре.

Задание 16. Составьте устную тему «Продолжение образования в университете».

Контрольное задание

Прочитайте текст. Выявите главную мысль каждого раздела и основную идею текста.

Some more degrees in the USA

Besides Bachelor's, Master's and Doctor's degrees there are some more specialized degrees and certificates in the USA.

Certificate of Advanced Study

A Certificate of Advanced Study (CAS), also called an "Advanced Certificate" (AC), or a Certificate of Advanced Professional Studies (CAPS), is a

post-Master's academic certificate designed for non-traditional students of the liberal arts. Some practitioners who seek a continuing education program to enhance their professional development in areas such as education and library science can choose it. Some Advanced Certificate programs are connected to an existing doctoral program such as PhD in Organizational Leadership.

For some disciplines, this certificate requires a three-year post-bachelor's program equivalent to a Specialist degree. For example, School Psychologists must earn an Master's degree plus Advanced Certification or Educational Specialist (Ed.S) degree in order to practice in a school setting.

Professional degrees

A professional degree, sometimes known as a first professional degree, prepares someone to work in a particular profession on the base of the academic requirements for licensure or accreditation. Professional degrees may be classified as bachelor's, master's or doctoral degrees. Many fields offer professional doctorates, such as pharmacy, medicine, psychology, physical therapy, law, business, management, architecture, education, teaching, and others require such degrees for licensure. These degrees are termed "first professional degrees", since they are also the first field-specific doctoral degrees.

Educational specialist

The Education Specialist, Educational Specialist or Specialist in Education (Ed.S. or S.Ed.), is an advanced degree for individuals who wish to develop advanced knowledge and theory beyond the master's degree level, but may not wish to get a degree at the doctoral level. Advanced programs beyond the master's degree provide the necessary background and professional expertise for those planning to go into university teaching, leadership roles in post- secondary schools, curriculum planning, or similar positions. The Ed.S. may take more than an additional year beyond the master's program to complete.

Engineer's degree

In the United States, the degree of engineer or engineer's degree is usually preceded by a master's degree and is not a prerequisite to a doctoral degree. The specific requirements differ considerably between institutions and between specialties within an institution. For graduate students in engineering, the two-year master's degree is most commonly followed by a traditional research doctorate (Ph.D.). However, the engineer's degree provides an alternative to the doctorate for professional engineers rather than academicians. The engineer's degree is in a category of its own. For example, a student with a B.S. and M.S. in electrical engineering might next earn the degree Electrical Engineer.

Тема 8: МЕЖДУНАРОДНОЕ СОТРУДНИЧЕСТВО В ОБЛАСТИ ОБРАЗОВАНИЯ (INTERNATIONAL COOPERATION IN EDUCATION)

Цели занятия:

1. Повторение ранее изученной и изучение новой лексики по теме «Международное сотрудничество в области образования».

2. Развитие умений и навыков перевода аутентичных текстов по широкому кругу специальности.

3. Развитие умений и навыков изучающего чтения аутентичного текста по теме «Международное сотрудничество в области образования».

4. Развитие умений и навыков ознакомительного и поискового чтения аутентичного текста по теме «Международное сотрудничество в области образования».

5. Развитие навыков и умений анализа текста, выявления проблемы и основной идеи.

6. Развитие навыков и умений монологической речи.

7. Развитие навыков и умений письма (написание деловых писем, заполнение заявок).

8. Развитие самообразовательного потенциала обучающихся, ориентирующих на саморегулирование дальнейшего образования и профессиональную мобильность.

Задание 1. Изучите информацию в учебно-методическом пособии О.В. Маруневич, Д.А.Чередниченко «Международное сотрудничество»: учебно-методическое пособие /; ФГБОУ ВО РГУПС. – Ростов н/Д, 2017. На стр.4 в упр.2. и выполните упр.1 и 3 на стр. 4.

Задание 2. Сопоставьте словосочетания из первого столбца с переводом на русский язык из второго столбца.

study/research visit	научно-исследовательский проект
to have a very busy time	предоставлять жилье
to provide accommodation	опытные сотрудники
experienced staff	останавливаться в отеле (гостинице)
to stay at a hotel/hall of residence	научная стажировка
research project	стажироваться по программе обмена
staff	конечный срок (подачи документов)
to do research on the exchange program(me)	оплачивать расходы
to fund the program(me)	заявка на участие

a three-months visit	трехмесячная стажировка
to bear/cover expenses	финансировать программу
applicant	быть представленным коллективу
deadline/closing date	претендент
application	сотрудники
to be shown round	сходная проблематика
to conduct joint experiments	показать (провести по)
to be introduced to the staff	взаимный интерес
to maintain contacts	организовать посещение
to arrange a visit	быть очень занятым
related fields	подход
collaboration	поддерживать контакт
curriculum vitae	подготовить материалы к опубликованию
mutual interest	проводить совместные эксперименты
approach	совместная работа
report on a research visit	быть поглощенным работой
to get the material ready for publication	выразить глубокую признательность
resume	отчет о стажировке
to express deep gratitude (to)	краткая автобиография
to be absorbed in work	резюме

Задание 3. Прочитайте и переведите текст.

Student exchange programs

A student exchange program provides opportunities for a student to live in a foreign country and to learn language, culture and profession. These programs are called 'exchanges' because originally the goal was an exchange of students between different countries. Now a student can go to another country without finding a counterpart to exchange with. The participants can either apply for a scholarship or be self-funded. An exchange student typically stays in the host country for a relatively short period of time of 6 to 10 months, but international students who study abroad can stay for several years. Some students on exchange programs can receive academic credit from the country they study in. An exchange student can live in a hostel or affordable apartment/house. Most programs expect the prospective exchange student to have a certain level of English and sometimes to demonstrate some ability to speak the language of the country they choose. Objectives of study visits can be as follows: to enhance the educational (and sometimes professional for master and doctoral programs) experience of student; broaden personal and educational perspectives; explore and understand different

cultures; to enhance the student`s ability in second language learning; to enable student to experience international education and so on.

The advertisements about the programs can be usually found in the Internet and in newspapers. Designated departments of the Universities can also provide relevant information about program requirements, application procedure, required application and supplementary documents, language requirements, deadlines.

Every applicant is usually expected to draft a tentative program of the visit. Any program is finalized with a report on the visit's outcomes.

Задание 4. Найдите в тексте эквиваленты следующих словосочетаний.

Программа обмена, предоставлять возможности, цель, найти коллегу для обмена, участник, претендовать на стипендию, принимающая страна, студенты, обучающиеся по программе обмена, учебный кредит/зачет, общежитие, приемлемый/по средствам, демонстрировать способность, цели, обогащать опыт, расширять перспективы, ознакомиться с образованием, заявка на участие, дополнительные документы, сроки исполнения, претендент, составить примерный план, ориентировочная программа, завершать, результаты визита.

Задание 5. Прочитайте и переведите информацию о программах обмена в университете.

Exchange Programs

Dear students!

We are glad that you consider the possibility to be a part of the student body of Samara Polytechnic University. The Department of International Academic Mobility is ready to provide a living and learning environment for semester exchange students. We hope this will enhance the potential for your intellectual and professional development.

Who is eligible: students from Partner Universities, with good command of English language. Command of Russian language is also welcome, but not obligatory.

Application Deadline:

20th May for Autumn semester

20th October for Spring Semester

Financial terms:

Students from Partner Universities do not have to pay for the education at Samara Polytechnic University. Dormitory costs, registration fee and visa fee, private expenses are covered by students themselves according to bilateral agreements.

For more information about the application procedure, please, check our Fact Sheet. General information can be found in the Brochure.

In case there is no Cooperation Agreement between Samara Polytechnic University and the student's home University he/she should contact the Admission office.

Application procedure

1.   Send the nomination letter and the copy of international passport to the Head of the Department of International Academic Mobility. Wait for the reply.

2.   If your candidature is approved, fill in online application form. Online application is obligatory.

3.   Send the required application documents in PDF-format to the Head of the Department of International Academic Mobility. Send hard copies of the required application documents to the address   of   the   Department   of International Academic Mobility. The required application documents are:

-     Application Form (should be filled correct and clear in block letters), Transcript of records,

-     Copy of international passport,

-     CV,

-     Motivation Letter,

-     Three passport size photos.

Language requirements

Good command of the English Language (at least B2) for students enrolled to the programs delivered in English is necessary. Basic knowledge of the Russian Language is desirable.

Language preparation is available. Russian Language courses are available during the whole exchange period – no tuition fee.

Accommodation

Help for finding private accommodation is provided. Student residence is available for incoming students. The University offers accommodation in student dormitory for all exchange students.

Visa (if applicable)

Support for student visa is provided. Samara Polytechnic University applies for Official Letter of Invitations for students at Migration Service local office.

Application form

Following   supplementary   documents   should   be   included   with   the application:

-     a Curriculum Vitae (C.V.)

-     a resume and a short essay on the problem under research;

-     a certificate issued by the department of English, certifying that you have a good working knowledge of English.

If an applicant meets the requirements, the Department of International Academic Mobility will send you an official invitation.

Задание 6. Ответьте на вопросы к тексту задания 5.

1.	What University provides the exchange program?
2.	What department is in charge of performing the exchange program?
3.	Who is eligible for the exchange program?
4.	What are the application deadline?
5.	Who pays for the education, dormitory costs, registration fee and visa fee, private expenses?
6.	What are the main steps of application procedure?
7.	What application documents are required?
8.	What supplementary documents should be included with the application?
9.	What are the language requirements for the exchange program participation?
10.	What kind of language preparation is available at the University?
11.	What kind of accommodation is available for incoming students?

Задание 7. Заполните бланк заявки на участие в программе обмена или научной стажировке.

Application form	
* compulsory information	Fill in with block letters
Name*	
Family name*	
Date of birth: year/ month/day	
Nationality*	
e-mail*	
Current address (where we will send your letter of acceptance): Street/ House number/ City/ Postcode/ Country	
Send the letter of acceptance to my work/university [ ] Send the letter of acceptance by e-mail [ ] Send it to my current address above [ ]	
Occupation*	
If student, discipline*	
Address to my university/work: University/ Street/ Number/ Department/ City/ Postcode/ Work e-mail	
I apply for the course*	
If student, number of years of studies in relevant disciplines	
Total number of years of univ. studies	
If accepted I will be applying for my Visa at the consulate/embassy of:	
I hearby certify that all the information given above is correct. I have read, understood and accepted the general requirements.	

Signature	
Date	
Official stamp of the University	

Задание 8. Прочитайте текст. Озаглавьте каждый абзац и выделите его основную мысль.

Visiting scholar

In USA, a visiting scholar, visiting researcher, visiting fellow or visiting professor is a scholar from an institution who visits a host university. His aim is to teach, lecture, or perform research on a topic. The position is often not salaried because the scholar typically is salaried or partially salaried by their home institution. A position as visiting scholar is for a couple of months or even a year, sometimes it can be extended.

When the University attracts prominent visiting scholars, it allows the faculty and graduate students to cooperate with prominent academics from other institutions, especially foreign ones. The visitors often actively participate in a number of productive institutional activities besides conducting their own research. The purpose of such programs is mutually beneficial: the university or educational institution can get an exceptional senior scholar who can contribute to the community's intellectual and research projects; the visitor has an excellent opportunity to use all the scientific and academic resources of the host university to carry out his research and develop his ideas.

The visiting scholar can perform the following activities: deliver guest lectures or faculty seminars to the host institution, engage in discussions with graduate or postgraduate research students, undertake collaborative research with faculty or staff, present a paper for the university's conference and seminar program.

Задание 9. На основе информации из текстов заданий 3 и 8 объясните сходства и различия между двумя типами программ (Exchange Programs, Research Visits).

Задание 10. Прочитайте текст о научных стажировках, предлагаемых Оксфордским университетом. Выберите предложения, которые информируют об организации проживания и ресурсах, предлагаемых университетом для приезжих.

Oxford regularly welcomes visitors to our many departments and research centers each year. Undergraduate or masters' students, doctoral students and faculty members can visit Oxford for a period of one month to one year. They all have the option of visiting Oxford's libraries and attending research seminars as an independent researcher. Oxford is able to accept two types of visiting researchers: visiting scholars (those who are research active academic staff at other institutions), visiting doctoral researchers (who are registered as doctoral students

at another institution). Graduate students who are interested in spending time studying under the supervision of an Oxford academic can enroll as Recognised Students.

There is a wide range of accommodation available in Oxford, but with two universities and many businesses based in the city it can take some time to find a suitable place to stay. You have the option of renting either private housing, or renting a room in a college or hall of residence. If you will be visiting Oxford for a month or longer, the best option may be to book a hotel for your first few days in Oxford, and then visit potential rooms for the rest of your visit once you are in Oxford in person. There are two main types of private housing in the UK: shared accommodation (renting a room in a house or flat shared with other people is a popular choice for short-term visitors), individual housing (a house or flat that you live in alone, without sharing kitchen and bathroom facilities with other people).

Resources for visitors include: academic resources such as lectures and seminars, accessing wifi, support and disability services, University Club, sports centre and others.

Academic departments have details of their own lectures and seminars on their websites, and many of the larger conferences and lectures are also included on the University's events list.

The Oxford Newcomers' Club provides a meeting point for partners of newly arrived graduate students and staff, including coffee mornings, tours of Oxford colleges, visits to museums, and coach trips to places of interest in the surrounding area.

The University Club is located on Mansfield Road and offers graduates a range of sporting facilities including a gym, football and cricket pitches and social spaces such as a bar, cafe and restaurant.

The Oxford Daily Information website has a huge range of information on life in Oxford, from daily lists of events and classes to guides to local shopping (including how to find supermarkets and where to buy a bike), launderettes, banking and other facilities, and should be your first port of call.

Making connections with other researchers, whether professionally or socially, is an invaluable opportunity while you are in Oxford Oxford; but it may not be easy if your visit to Oxford is relatively short. Your host department may have research networks or committees you can join, and the Oxford Research Staff Society hosts events open to researchers across the University.

Задание 11. Прочитайте отчет о стажировке. Ответьте на вопросы.

1. Who had a research visit?
2. Where did the visit take place?
3. Name the hosting and sending institutions.
4. Who provided a grant for the research visit?
5. What was the original plan of the visit?
6. What were the results of the research visit?

7. What career development opportunities did the researcher get?

Report on research visits supplied by an individual researcher

Report: Research Visit of Roland Poms at the Institute of Environmental Science and Research, New Zealand.

Mobility and Exchange Programme 2010-2011

MoniQA supported research visit of Dr. Roland Poms from the International Association for Cereal Science and Technology, Austria at the Institute of Environmental Science and Research, New Zealand.

I was granted a MoniQA-EC mobility grant to support a research visit to the Institute for Environmental Science and Research, Christchurch, New Zealand, for the time 1 September 2010 – 31 May 2011. The research visit intensified the collaboration activities between the hosting (ESR) and sending (ICC) institutions and was intended for me personally to be able to concentrate on completing and refining research outputs. The original plan to focus on research work related to developing and validating a method for gluten-free analysis and the further development and validation of food allergen reference materials, was expanded during my visit to microbiological work in collaboration between ESR and various other MoniQA partners, and extending network activities to more institutions in the Asian-Pacific region as well as initiating new research collaborations and projects.

For me personally, my research visit was a great experience in terms of personal and professional development, improving my soft skills and actively contributing to research work at the laboratory bench. Furthermore, ESR and New Zealand offered me a working environment and opportunities to connect with various research initiatives and institutions, which helped me to extent my professional network, increase impact and supported my career development by additional publishing opportunities and achieving a state professorship at the University of Natural Resources and Life Science in Vienna, Austria, and a 5 year tenure as Special Professor at Sichuan University in Chengdu, China.

Summary of achievements/outputs related to my research visit to ESR:

1. Gluten-free analysis – development/adaptation of a method for routine analysis.

2. Design and preparation of Reference Materials for gluten-free analysis.

3. Guideline for validation requirements for food allergen analysis.

4. Proficiency test: food allergen analysis for milk in bakery products.

5. Assessing impacts of chemical contaminants in foods and feedstuffs.

6. Attending seminars/workshops.

7. Giving presentations on the outputs.

8. Organising an international workshop at ESR.

9. Publications, reviewing manuscripts.

10. Linking ESR with international initiatives and new research proposals.

11. Report: My personal experience.

My research visit was important for demonstrating the close and successful collaboration between EU and New Zealand, between ESR and ICC, but most of all for establishing the additional contacts and collaboration opportunities between the institutions.

Задание 12. Изучите материал по темам «Электронные письма и факсы» и «Общая структура деловых писем», представленный в учебном пособии Деловая корреспонденция: учебное пособие по подготовке к тестированию по английскому языку / М.В. Хлебникова, В.А. Ражина; Рост. гос. ун-т путей сообщения. – Ростов н/Д, 2010 на стр.6-10 и выполните задания 1, 2, 3 на стр.9-10.

Задание 13. Напишите деловое письмо главе исследовательского отдела Вашингтонского университета (University of Washington) с просьбой уточнить, рассматривается ли Ваша заявка на программу по обмену аспирантами и магистрантами. Все документы были отправлены Вами на электронную почту исследовательского отдела 2 недели назад, но ответ до сих пор не получен.

Контрольные задания

Задание 1. Приведите английские эквиваленты данных словосочетаний.

Программа обмена, научная стажировка, останавливаться в отеле, организовать посещение, представить коллегам, работать в сотрудничестве, проводить совместные исследования, быть занятым работой, тщательно анализировать, готовить материал к публикации, предоставлять возможности, цель визита, претендовать на стипендию, принимающая страна, студенты, обучающиеся по программе обмена, учебный кредит/зачет, общежитие, оплачивать проживание и обучение, обогащать опыт, расширять перспективы, ознакомиться с образованием, заявка на участие, сроки исполнения, составить примерный план, ориентировочная программа, предоставить отчет о визите.

Задание 2. Напишите деловое письмо главе международного отдела Вашего университета (University of Washington) от имени магистранта Оксфордского университета (John Brown) с просьбой уточнить возможность проведения научной стажировки в сроки, отличающиеся от предложенных на сайте вуза, например, не с сентября по декабрь, а с декабря по март.

Тема 9: СОВРЕМЕННЫЕ ТЕНДЕНЦИИ И ПЕРСПЕКТИВЫ РАЗВИТИЯ ОТРАСЛИ (MODERN TRENDS AND PROSPECTS OF THE BRANCH DEVELOPMENT)

Цели занятия:

1. Развитие навыков и умений чтения, перевода аутентичных текстов по теме «Современные тенденции и перспективы развития отрасли».

2. Развитие навыков и умений монологической и диалогической речи с передачей основного содержания прочитанного текста.

3. Развитие навыков и умений употребления в речи различных коммуникативных типов предложений, содержащих конструкции с неличными формами глагола.

Задание 1. Ответьте на вопросы:

1. What do you think of the new innovative trends in the development of different brunches of industry in the modern world?
2. What field of activity are you going to work?
3. What innovative technologies are most effective in the work of your sphere of activity?
4. Reflect on the improving of the company organization work.
5. What steps should be taken to summon up the employees.
6. What other points would you offer to touch in connection of the topic which is under study?

Задание 2. Прочитайте и переведите данный текст:

How Is Technology Impacting the Changes in the 21st Century Workplace?

Significant changes in the workplace are the result of new and advanced technology. For the past generation, technological inventions and improvements seem to be introduced every week. The trend is guaranteed to continue. Technology impact on the 21st century workplace will result in rapid changes.

Changing Workplace Rules

Technology makes it possible to telecommute, work from virtual offices and communicate with businesses and individuals across the globe. Flexible work schedules are popular because so many duties and responsibilities can be accomplished from an employee home or while the employee is traveling. The private sector initially became the test case for telecommuting arrangements, and the federal government followed suit in its attempt to be competitive with industry in attracting qualified candidates. Remote reporting relationships are also a factor of improved technology. Managers of team members who live and work in different cities, and even different countries is becoming more common.

Cost of Technology

As companies demand more sophisticated technology to help manage their businesses, the cost to develop and produce applications will likely increase. Customized programs that meet the specific needs of a business are becoming more popular as companies engage the services of functional and technology consultants. These experts can determine the type of solutions necessary to help the business run smoothly and efficiently. Companies such as SAP produce technology solutions for virtually every part of industry. SAP and similar firms routinely send to their clients functional consultants familiar with the type of business and technology consultants who know how to engineer the solutions.

Technology Careers

Careers in computer science and information technology continue to grow. Students in colleges, universities and technical institutes seeking careers in this industry will likely be recruited upon graduation. According to U.S. News; World Report, jobs in this field are among the top 10 careers, stating computer software engineers are in demand. The work of designing, building, maintaining, and integrating those increasingly complex systems continues to be one the fastest-growing corners of the job market. The U.S. Bureau of Labor Statistics reports indicate that occupations in computer science and information technology will add more than 785,000 new jobs from 2008 to 2018. Statisticians predict the technology field will expand exponentially because of the demand for state of the art technology products.

Globalization and Technology

Technology huge impact on globalization enables companies of all sizes to do business with customers all over the world. In addition, businesses can establish satellite offices in practically any country no matter how remote as long as there is Internet access. The competition for providing Internet access to developing nations will proliferate, enabling growth in areas previously deprived of business opportunities due to lack of communication devices. The other side of the coin is the international marketing of technology researched by George Washington University technology professor Robert W. Rycroft. He makes an interesting observation about multinational countries engaged in international marketing of technology products. This practice has been coined as "technology exploitation." By this observation, it is the desire to push products that is creating wider globalization efforts instead of globalization efforts creating a need for advanced technology.

Considerations

The world of computers and information technology has become such an important aspect of our lives, and it's highly doubtful that there will be a return to traditional methods of conducting business. The primary benefit of technology is efficiency. Businesses--from small businesses to large conglomerates--are capable of providing products and services at a faster, more efficient rate which can result in higher profits.

Задание 3. Ответьте на вопросы по тексту.

1. Do you think that the title of the text is relevant to its content?
2. Can you think of the alternative title? (prove your point of view)
3. What are the most important developments in the branch/sphere you work in?
4. What are modern trends and prospects in this branch?

Задание 4. Составьте диалог на основе текста.

Задание 5. Передайте содержание текста на английском языке.

Задание 6. Прочитайте и переведите текст:

Modern Trends in the Development of the Company Strategies

Today, the world is changing at a faster pace than ever before. Rapid change in technology, a significant surge in the number of smartphone users, and constantly evolving social media have changed the way people learn new things. Learning and development strategies of companies must change with the time to address the emerging challenges. Organizations need to adopt modern tools and techniques that enable the people to learn in a most efficient manner. Adopting traditional strategies such as "one size fit all" will neither help employees nor organizations in overcoming contemporary challenges.

Here are top five learning and development trends that will dominate in 2017. Develop your training strategies around these trends to get maximum return on your investment.

Mobile Learning

The number of smartphone users worldwide has crossed 2 billion in 2016. Your employees spend significant time on their smartphones. They use mobile devices to do a majority of the daily tasks including learning new concepts.

Use the idea of micro-learning to tap the audience who love mobile. Through micro-learning, you can deliver bit size content to the learners when they need it. Use Live Stream micro-videos to catch users' attention. Rise in Mobile devices is a global phenomenon. Thus, you can use this strategy to engage more employees from developed as well as emerging economies. Google's Primer is the best example of training through micro-learning that is being used efficiently on a large scale.

Social Learning

Social learning is not new. It has been there for quite some time. However, the changes in the structure of workforce have necessitated the need for social learning as an integral part of learning and development strategies.

Two factors are driving the need to adopt the social learning in organizations. Firstly, today increasing number of companies are using distributed

workforce. In the absence of physical proximity between the employees, internal social media networks for learning and development are playing critical roles in the seamless exchange of ideas.

Secondly, the proportion of millennial in the workforce is increasing continuously. The millennial have grown up with social media and find the email a highly unproductive medium to communicate. Thus, they use social media frequently to share files, videos and communicate efficiently.

Facebook has recently launched "Workplace" that allows organizations of any size to adopt social media for learning and developmental purposes.

Adaptive Learning

In adaptive learning, the instructions are delivered based on individuals' preferences and inputs. The training methods can be optimized by teaching only those concepts which are not known to a user. Also, the users can learn at their own pace.

No two learners are same and therefore, adaptive learning accelerates the learning of individuals while lowering the cost of content delivery. Vendors are using adaptive learning to optimize the resources while delivering the maximum value to their clients.

The adaptive learning is ideal for most of your employees. Low and average performers can use it to improve their performances in the future, while high performers will use it to quickly sharpen their skills.

Virtual Reality

Virtual reality is about to change the training and development landscape across organizations. With VR, the learners can have an immersive experience. The concepts of augmented reality can be used to create a real environment for teaching complex concepts. For example, a real life case study based on leadership can be created in augmented reality and learners can play the roles of various characters in these cases to learn leadership lessons. To conduct such kind of lessons, the pupils need not be physically present. They can be located anywhere across the globe. They simply need to have a fast internet connection, a computer or mobile, and a 3D headset suitable for VR.

You may not be able to use the Virtual Reality in your learning and development strategies immediately. However, keep it in your consideration. This technique can emerge as the most powerful learning methods in near future.

Measuring Effectiveness

In training and development, nothing is more important than measuring the outcome and taking the corrective measures to improve the effectiveness of the training process. Fortunately, the technology is proving to be very useful in measuring the effectiveness of training methods accurately. Companies are using innovative techniques and going an extra mile to gauge the success of their training and development programs. And, it is not just left to the HR. CEOs are increasingly showing their interest in improving the overall training and development strategies.

Conclusion

Trends don't pop-up out of nowhere. It is the continuous innovation that brings about new methods that work better than the others. Thus, effective methods go viral and become trends. As an astute professional, you need to keep a close eye on every development in the training and development space and other areas. Connect the dots and use newer techniques even from outside the learning and development domain to make your strategies unique and innovative. Use these five trends as a starting point to develop a learning & development plan that is modern and best suited for your organization.

Задание 7. Ответьте на вопросы по тексту.

1.   Do you think that the title of the text is relevant to its content?
2.   Can you think of the alternative title? (prove your point of view)

Задание 8. Составьте диалог на основе текста.

Задание 9. Передайте содержание текста на английском языке.

Задание 10. Ознакомьтесь с информацией по теме «Неличные формы глагола» в пособии Неличные формы глагола : учеб. пособие на английском языке / Н.А. Малишевская, С.В. Первухина ; Рост. гост. ун-т путей сообщения. – Ростов н/Д, 2009. Стр.4-6, 9-10, 12, 14-16, 18-19.

Задание 11.   Заполните пропуски инфинитивами, используя предложенные выражения.

to cut a long story short to say the least of it
to tell the truth … leaves much to be desired
to put it mildly to be difficult to deal with
to begin with to be hard to please
to be pleasant to look at to have nothing (nobody) …

1) She has got an awful character. She is … … .

2) The story of their love is very long. … they finally got married.

3) … we were greatly surprised … … .

4) I am not going to blame her for her behaviour. … … she was impolite.

5) I didn't like the new film. I think it … … .

6) He never likes anything and is … … .

7) My brother is fond of reading. He has read all the books in our home library, so now he has … … .

8) My grandmother has … … . That's why she feels lonely.

9) … … Canada is a large northern country.

10) My mother won't come to school today. … … I haven't told her.

Задание 12. Выберите правильный ответ.

1) Are you sure you told me? I don't remember … about it.
a) having told b) having being told c) to have told d) to have been told

2) Dan appears … some weight. Has he been ill?
a) having lost b) having been lost c) to have lost d) to have been lost

3) We would like … to the president's reception, but we weren't … .
a) having invited b) having been invited c) to have invited d) to have been invited

4) The spy admitted … some highly secret information to enemy agents.
a) having given b) having been given c) to have given d) to have been given

5) We were shocked to hear the news of your … .
a) having fired b) having been fired c) to be fired d) to have been fired

6) The baby continued … even after she was picked up.
a) being crying b) having cried c) to cry d) having been crying

Задание 13. Закончите предложения, используя Complex Object и Complex Subject.

1. I heard … … (the boys – to cry outside).

2. She has never seen … … (her mother – to weep).

3. We saw … … (they – to get into the car).

4. I saw … … (he – to get off the bus).

5. Robert noticed … … (the stranger – to hide the papers).

6. Tom … (to happen) to catch the train.

7. Ann … (to prove) to be married.

8. She … (to turn out) to have lost her money.

9. The concert … (to report) to begin at 8.

10. His father … (to know) to be in hospital now.

Задание 14. Используйте соответствующую форму инфинитива.

1. He made me (do) it all over again.
2. I used (smoke) 40 cigarettes a day.
3. It may (rain) tomorrow.
4. He will be able (swim) very soon.
5. You ought (go) today.
6. They won't let us (leave) till morning.

Задание 15. Переведите на английский язык, используя инфинитивы и инфинитивные конструкции.

1. Полезно заниматься гимнастикой ежедневно.
2. Я никогда не слышал, что он говорит по-французски.
3. Он хочет, чтобы его сын стал врачом.
4. Приятно купаться в такой прекрасный день.
5. Я полагаю, что эта информация очень важна.
6. Она видела, что он вошёл в дом.

Задание 16. Составьте устную тему «Современные тенденции и перспективы развития отрасли».

Контрольные задания

Задание 1. Выберите форму причастия.

1) … this text I found many interesting expressions.
a) reading b) having read
2) … my work I went out for a walk.
a) finishing b) having finished
3) She sat by the window looking at the boys … in the yard.
a) playing b) having played
4) … through the magazine I put it aside.
a) looking b) having looked

Задание 2. Выберите герундий или инфинитив.

1. He went on (to read).
2. We decided not (to go out).
3. Will you stop (to talk) about it?
4. I suggest (to see) this film.

Задание 3. Выберите соответствующую форму.
1. I heard him … to somebody loudly.
a) talk b) to talk c) talking
2. What makes you … so?

a) think b) to think c) thinking
3. Let me … you.
a) help b) to help c) helping
4. We expected the guests … at 5.
a) come b) to come c) coming

Задание 4. Заполните пропуски соответствующими формами инфинитива.

1. Nobody heard him … the house.
a) leave b) have left
2. We wanted the letter … immediately.
a) to post b) to be posted
3. Her mother would like her … Tom.
a) to marry b) to be married
4. She told me … it by Monday.
a) to do b) to have done
5. They seem … still.
a) to have worked b) to be working
6. It is likely … soon.
a) to rain b) to be raining

Задание 5 . Перепишите предложения, используя Complex Object.

1. Please, don't tell anyone that I'm leaving my job.
I / not / want / anyone / know / it.
2. There's a football match next Saturday between England and Italy.
You / want / England / win?

Задание 6. Перепишите предложения, используя Complex Subject.

1. It is said that this mountain is the highest in Europe.
2. It was reported that five ships were missing after the battle.

Тема 10.   ПРЕДСТАВЛЕНИЕ   ОРГАНИЗАЦИИ   (THE PRESENTATION OF THE COMPANY).

Цели занятия:
1.   Развитие   навыков   и   умений   чтения, перевода   аутентичных текстов по теме «Представление организации».
2.   Развитие   навыков   и   умений   монологической   и   диалогической речи.
3. Развитие навыков и умений реферирования иноязычных статей с передачей основного содержания прочитанного.
4.   Развитие   навыков   и   умений   использования   инновационных информационных ресурсов.

Задание 1. Прочитайте и переведите текст.

Organizational Structure Types in Companies

Companies utilize organization structure to create their business hierarchies. Each company determines the staffing levels that it needs to operate efficiently, and organization structures play an important role in this determination. In addition to delineating company levels, organizational structures assign clear roles to departments and individuals to provide them with a sense of purpose and responsibility. While organizational structures can be unique to different companies, there are several distinct and commonly used types of organizational structures.

Functional Structure

Functional structure provides organization according to a job's (or an individual's) purpose within the organization. Functional organizations are most easily recognized by departments that focus on a single function or goal. For instance, an organization with a marketing department, a human resources department, a research and development department and so forth, operates according to functional organization. The functional structure provides employees, as well as their appropriate departments, with a clear objective and purpose for their work. In other words, employees within a marketing department know that their job is marketing and, as a result, those employees can focus on improving their marketing work and even specialize in a specific area of marketing. On the other hand, functional structure can create divisions between departments if a conflict develops between departments.

Divisional Structure

Divisional structure operates as a more decentralized version of the functional structure, in that the functions still exist within the organization, but the functions have been separated by product or region. In other words, the divisional structure decentralizes the organization into different units, each of which has its own functional department. For example, an organization might be divided into

five regions across the United States. Each of those divisions will have its own marketing department, human resources department, and research and development department. Divisional structure can also occur at the product level if a company chooses to divide itself by the types of products in which it specializes or at the market level if a company addresses distinct markets separately.

Matrix Structure

Matrix structures were developed to create the best of both worlds, so to speak, and combine elements of the functional structure and the divisional structure. The matrix structure creates teams for organizational projects that need to be completed and, in creating teams, draws together the most qualified employees for the project from various areas of the organization. Instead of utilizing only department heads, which would be common in the functional and divisional structures, the matrix structure focuses more on project heads or managers who oversee a diverse group of individuals from different parts of a company. The matrix structure can become confusing, though, due to the greater level of decentralization, because it is not always clear who is in the leadership role in a group. A matrix structure is considered most effective for companies that operate internationally or across a wide range of geographical area.

Задание 2. Выберите основные признаки каждого типа структуры компании.

Задание 3. Подберите в Интернете статью об известной компании и кратко передайте ее содержание по-английски.

Задание 4. Ответьте на вопросы о Вашей организации.

If you are still studying:
• what kind of organization do you want to work for?
• in which department? (e.g. production, finance, accounting, marketing, sales, human resources)
• do you think it will later be possible to change departments?
• what do you think your first position will be?
• do you expect to have one immediate boss, to work for more than one superior, or to be part of a team?

If you are already working:
• what is your function or job title?
• what are you responsible for?
• who are you responsible to? (who do you report to?)
• does anybody report to you?
• what other units, departments or divisions do you regularly have to work with?
• what other departments do you occasionally have conflicts with?

Задание 5. Подберите определения к терминам.

1 autonomous	A a system of authority with different levels, one above the other
2 decentralization	B a specific activity in a company, e.g. production, marketing, finance
3 function	C independent, able to take decisions without consulting a higher authority
4 hierarchy	D people working under someone else in a hierarchy
5 line authority	E dividing an organization into decision-making units that are not centrally controlled
6 report to	F the power to give instructions to people at the level below in the chain of command
7 subordinates	G to be responsible to someone and to take instructions from him or her

Задание 6. Прочитайте и переведите текст.

Company Structure

Most organizations have a hierarchical or pyramidal structure, with one person or a group of people at the top, and an increasing number of people below them at each successive level. There is a clear line or chain of command running down the pyramid. All the people in the organization know what decisions they are able to make, who their superior (or boss) is (to whom they report), and who their immediate subordinates are (to whom they can give instructions).

Some people in an organization have colleagues who help them: for example, there might be an Assistant to the Marketing Manager. This is known as a staff position: its holder has no line authority, and is not integrated into the chain of command, unlike, for example, the Assistant Marketing Manager, who is number two in the marketing department.

Yet the activities of most companies are too complicated to be organized in a single hierarchy. Today, most large manufacturing organizations have a functional structure, including (among others) production, finance, marketing, sales, and personnel or human resources departments. This means, for example, that the production and marketing departments cannot take financial decisions without consulting the finance department.

Functional organization is efficient, but there are two standard criticisms. Firstly, people are usually more concerned with the success of their department

than that of the company, so there are permanent battles between, for example, finance and marketing, or marketing and production, which have incompatible goals. Secondly, separating functions is unlikely to encourage innovation.

Yet for a large organization manufacturing a range of products, having a single production department is generally inefficient. Consequently, most large companies are decentralized. Each division had its own engineering, production and sales departments, made a different category of car (but with some overlap, to encourage internal competition), and was expected to make a profit.

Businesses that cannot be divided into autonomous divisions with their own markets can simulate decentralization, setting up divisions that deal with each other using internally determined transfer prices. Many banks, for example, have established commercial, corporate, private banking, international and investment divisions.

An inherent problem of hierarchies is that people at lower levels are unable to make important decisions, but have to pass on responsibility to their boss. One solution to this is matrix management, in which people report to more than one superior. For example, a product manager with an idea might be able to deal directly with managers responsible for a certain market segment and for a geographical region, as well as the managers responsible for the traditional functions of finance, sales and production. This is one way of keeping authority at lower levels, but it is not necessarily a very efficient one.

A further possibility is to have wholly autonomous, temporary groups or teams that are responsible for an entire project, and are split up as soon as it is successfully completed. Teams are often not very good for decision-making, and they run the risk of relational problems, unless they are small and have a lot of self-discipline. In fact they still require a definite leader, on whom their success probably depends.

Задание 7. Выберите из текста задания 6 слова и словосочетания, относящиеся к разделам:

- отделы в компании,
- должности в компании,
- должностные обязанности.

Задание 8. Изучите лексику, описывающую структуру компании. Переведите предложения на русский язык.

consists of, contains, includes, is composed of, is made up of, is divided into, to be in charge of , to be responsible for, to support, to be supported by, to assist, to be assisted by, to be accountable to.

1. The company consists of five main departments.
2. The marketing department is made up of three units.

3. The sales department is divided into two sections.
4. The marketing department is in charge of the sales force.
5. The marketing department is responsible for advertising, sales promotions and market research.
6. The five department heads are accountable to the Managing Director.

Задание 9. Выберите из следующих высказываний те, которые отражают преимущества работы
- в большой компании;
- в маленькой компании.

1. If you have problems with your colleagues you can always change departments.
2. The atmosphere is friendlier and you know everyone.
3. You are often responsible for a variety of different tasks.
4. You can actually see the result of your contribution to the company.
5. You can be proud of working for a company with a national or international reputation.
6. You can become more specialized in your work.
7. You can deal with problems face-to-face.
8. You have a better possibility of realizing your potential.
9. You have more independence, and you don't always have to wait for permission from a superior.
10. You may be able to go and work in a foreign subsidiary.
11. You often get greater freedom, flexibility and openness to change.
12. You'll probably get a slightly higher salary.
13. You're unlikely to be fired in a sudden reorganization or downsizing.
14. Your company will be in a better position in an economic downturn or recession.

Задание 10. Составьте устную тему «Представление организации» и подготовьте проект (презентацию) по этой теме.

Задание 11. Напишите статью на английском языке в вэб-блог по теме «Моя организация». Объем статьи 150 слов.

Задание 12. Прочитайте текст и ответьте на вопросы:
- What do you know about the structure of the Russian Higher Educational Establishments?
- What scientific degrees do you know?
- What positions in the University do you know?
- What world famous Universities do you know?
- What Russian Universities do you know?
- What do you know about the history of the University you study at?

- What do you think about the problems of the Higher Education in Russia?
- Reflect on the prospects of the Higher Education in the Russian Federation.

University Structure

The head of a university is Rector. Usually there are several faculties in a university. Each faculty has a number of specialized departments and is headed by dean. The course of studies lasts 4–5 years. The academic year in this country's higher schools begins on the 1-st of September and is divided into two terms (semesters). Students take exams at the end of each semester. If the results of the examinations are good, students get grants. Twice a year students have vacations – two weeks in winter and two months in summer. My University has several buildings, old and new ones. There are many various laboratories. There is a very good library and a computer center in the main building. Every faculty has its own specialized library, laboratories, workshops and computer centers. The first- and second-year students study general engineering subjects. In the third year students begin to study specialized subjects. A very good tradition of our University is that theory is accompanied by practical training. Students begin to work at the University's well-equipped laboratories and in senior years at various plants, design offices and research institutes of this country. It is interesting but difficult to study at our University, especially for the first-year students as they do not know yet how to organize their work and time. A university or college awards a degree to a person who has completed a required course of study. The institution presents the degree in the form of a diploma, a document which certifies the award. The basic kinds of degrees are called bachelor, master, and doctor. An honorary degree may be awarded for an outstanding contribution in a certain field. Most students wishing to take a degree course seek entrance to a university. In some countries students can take degree courses as external students, through correspondence and television courses. Most universities require a good pass in the final secondary school examination, and competition is keen for entry into such faculties as medicine and law. If possibly, a student planning to study in a university should seek information two years before completing a secondary school course. This will permit a choice of subjects appropriate for the intended course.

Honorary degrees. Many universities have adopted the custom of awarding honorary degrees to persons for achievement in their chosen fields. Chief among these are the Doctor of Letters (DLitt) and the Doctor of Laws (LLD). These degrees are often given to prominent authors, scholars, and leaders in professions, business, government, and industry.

Ph.D. and Post-Doctorate Study: academic degrees of Doctor of Philosophy and Doctor of Science are awarded upon public presentation of the dissertation. The results of research work of a postgraduate student must be published in scientific journals. For a Doctor of Science degree, research results must be published in monographs.

Any University has academic and non-academic staff.

Academic Positions and Titles

Lecturer and Senior Lecturer positions can be held by university graduates holding Specialist or Master degree.

Assistant Professor position can be held by postgraduates.

Associate Professor position can be held by researchers holding a Ph. D. degree.

Professor position can be held by researchers holding a Doctor of Science degree.

Academic title of Associate Professor is awarded for research and academic achievements to university faculty holding a Ph. D. degree and the position of Associate Professor.

Academic title of Professor is awarded for research and academic achievements to university faculty holding a Doctor of Science degree and the position of Professor.

Задание 13. Изучите рекомендации по подготовке краткого пересказа текста. Воспользуйтесь ими для пересказа текста задания 12.

1. Просмотрите текст и логически разделите его на части.
2. Выпишите ключевые слова и выражения из текста.
3. Составьте вопросы по содержанию текста.
4. Составьте план пересказа текста.
5. Кратко воспроизведите текст на английском языке.

Задание 14. Изучите ключевые фразы, используемые для реферирования статей на английском языке.

Key words and set-expressions for abstracting (annotation) and rendering the text

1. Название статьи, автор, стиль.

The article I'm going to give a review of is taken from… — Статья, которую я сейчас хочу проанализировать из…

The headline of the article is — Заголовок статьи…

The author of the article is… — Автор статьи…

It is written by — Она написана …

The article under discussion is … — Статья, которую мне сейчас хочется обсудить, ….

The headline foreshadows… — Заголовок приоткрывает

2. Тема. Логические части.

The topic of the article is… — Тема статьи

The key issue of the article is… — Ключевым вопросом в статье является

The article under discussion is devoted to the problem… — Статью, которую мы обсуждаем, посвящена проблеме…

The author in the article touches upon the problem of… — В статье автор затрагивает проблему….

I'd like to make some remarks concerning… — Я бы хотел сделать несколько замечаний по поводу…

I'd like to mention briefly that… — Хотелось бы кратко отметить…

I'd like to comment on the problem of… — Я бы хотел прокомментировать проблему…

The article under discussion may be divided into several logically connected parts which are… — Статья может быть разделена на несколько логически взаимосвязанных частей, таких как…

3. Краткое содержание.

The author starts by telling the reader that — Автор начинает, рассказывая читателю, что

At the beginning of the story the author — В начале истории автор

describes — описывает

depicts — изображает

touches upon — затрагивает

explains — объясняет

introduces — знакомит

mentions — упоминает

recalls -вспоминает

makes a few critical remarks on — делает несколько критических замечаний о

The story begins (opens) with a (the)

description of — описанием

statement — заявлением

introduction of — представлением

the mention of — упоминанием

the analysis of a summary of — кратким анализом

the characterization of — характеристикой

(author's) opinion of — мнением автора

author's recollections of — воспоминанием автора

the enumeration of — перечнем

The scene is laid in … — Действие происходит в …

The opening scene shows (reveals) … — Первая сцена показывает (раскрывает) …

We first see (meet) … (the name of a character) as … — Впервые мы встречаемся с (имя главного героя или героев)

In conclusion the author

dwells on — останавливается на

points out — указывает на то

generalizes — обобщает

reveals — показывает

exposes — показывает

accuses/blames -обвиняет

mocks at — издевается над

gives a summary of -дает обзор

4. Отношение автора к отдельным моментам.

The author gives full coverage to… — Автор дает полностью охватывает…

The author outlines… — Автор описывает

The article contains the following facts…./ describes in details… — Статья содержит следующие факты …. / подробно описывает

The author starts with the statement of the problem and then logically passes over to its possible solutions. — Автор начинает с постановки задачи, а затем логически переходит к ее возможным решениям.

The author asserts that… — Автор утверждает, что …

The author resorts to … to underline… — Автор прибегает к …, чтобы подчеркнуть …

Let me give an example… — Позвольте мне привести пример …

5. Вывод автора.

In conclusion the author says / makes it clear that…/ gives a warning that… — В заключение автор говорит / проясняет, что … / дает предупреждение, что …

At the end of the story the author sums it all up by saying … — В конце рассказа автор подводит итог всего этого, говоря …

The author concludes by saying that../ draws a conclusion that / comes to the conclusion that — В заключение автор говорит, что .. / делает вывод, что / приходит к выводу, что

6. Выразительные средства, используемые в статье.

To emphasize … the author uses… — Чтобы акцентировать внимание … автор использует

To underline … the author uses… Чтобы подчеркнуть … автор использует

To stress… — Усиливая

Balancing… — Балансируя

7. Ваш вывод.

Taking into consideration the fact that — Принимая во внимание тот факт, что

The message of the article is that /The main idea of the article is — Основная идея статьи (послание автора)

In addition… / Furthermore… — Кроме того

On the one hand…, but on the other hand… — С одной стороны …, но с другой стороны …

Back to our main topic… — Вернемся к нашей основной теме

To come back to what I was saying… — Чтобы вернуться к тому, что я говорил

In conclusion I'd like to… — В заключение я хотел бы …

From my point of view… — С моей точки зрения …

As far as I am able to judge… — Насколько я могу судить .

My own attitude to this article is… — Мое личное отношение к

I fully agree with / I don't agree with — Я полностью согласен с/ Я не согласен с

It is hard to predict the course of events in future, but there is some evidence of the improvement of this situation. — Трудно предсказать ход событий в будущем, но есть некоторые свидетельства улучшения.

I have found the article dull / important / interesting /of great value — Я нахожу статью скучной / важной/ интересной/ имеющую большое значение (ценность)

Задание 15. Найдите в приложении 2 статью, относящуюся к Вашей отрасли/ сфере деятельности/ области исследования, и определите общую тематику текста.

Задание 16. Ответьте на вопросы по тексту:

1. Did you (the author) provide your (his) paper with a list of references?

2. Whom did you (the author) make reference to?

3. Is your (the author's) list of references complete (extensive, numerous, adequate, inadequate)?

4. What kind of book do you consult if you need some information?

5. What reference work do you usually consult?

6. Who is the author or editor of this work of reference?

7. What is the headline of the article you are going to tell us about?

8. What is the heading of the last section?

9. Does the title describe the subject?

10. Under what headings does the subject matter appear?

11. What is the title of your paper?

Задание 17. Используйте "consist (of)" вместо "contain", там, где это возможно:

1. The last part of my thesis contains references to other workers in this special branch of law.

2. The paper contains a description of work carried on in our department.

3. The volume contains 20 articles.

4. The book contains a careful account of work done in the USA in this field of science.

5. The text contains a number of minor errors.

6. My article contains four parts.

Задание 18. Переведите на английский язык:

1. – Из скольких частей состоит ваша диссертация?

– Из двух. В первой части содержится описание истории вопроса и метода исследования, а во второй – само исследование и его результаты.

2. – Из скольких глав состоит книга?

– Из десяти.

– И в каждой главе есть (содержатся) новые данные?

– Да. В каждой главе много новых данных.

Задание 19. Расскажите о своих публикациях, опираясь на следующие вопросы:

1. What is the subject of your thesis?
2. Have you already published any articles?
3. Where and when did you publish them?
4. What are the titles of your published papers?
5. What problems do you deal with in those papers?
6. What are you going to prove in the course of your research?
7. Is there much or little material published on the subject of your research?
8. Who are your published papers addressed to?
9. What do you give much attention to in you published papers?
10. What is of particular interest in your paper?
11. How many parts does your paper consist of?
12. What is the purpose of your paper?
13. What do you treat in your introductory part?
14. What do you say in conclusion?
15. Who do you makes references to?

Задание 20. Используя Интернет-источники найдите статью, подходящую по тематике к вашей отрасли, и выполните реферирование, используя ключевые фразы и выражения из задания 14.

Тема 11: Устройство на работу (Recruitment)

Цели занятия:
1. Развитие навыков и умений чтения, перевода аутентичных текстов по тематике «Устройство на работу».
2. Развитие навыков и умений монологической речи для передачи основного содержания прочитанного текста
3. Развитие навыков и умений письменной речи для составления резюме и сопроводительного письма.
4. Повышение готовности обучающихся к профессиональной мобильности.

Задание 1 . Прочтите текст и ответьте на следующие вопросы:

1. What is a CV (resume)?
2. What should be mentioned in a good resume?
3. What are the applicants' skills and qualities that are mo st often sought by employers?

Recruitment

When a company needs to recruit or employ new people, it may advertise the job or position in different ways. People who are interested can apply for the job by sending in a letter of application or covering letter (US cover letter and a curriculum vitae or CV (in US-resume) containing details of their education and experience.

A company may also ask candidate to complete a standard application form. The company's Human Resources department will then select the most suitable applications and prepare a shortlist of candidates or applicants, who are invited to attend an interview. Another way for a company to hire is by using the services of a recruitment agency, which provides a list of suitable candidates.

A growing number of companies are no longer satisfied with traditional job interviews. Instead, they are requiring applicants for many white – collar jobs to submit to a series of written tests, roleplaying exercises, simulated decision-making exercises. Others put candidates through a long series of interviews by psychologists or trained interviews. Employers want to evaluate candidates on the following qualities:
- Is the candidate creative and entrepreneurial?
- Can the candidate led and coach?
- Is the candidate flexible and capable of learning?
- Does the candidate have enough skills and knowledge?
- How will the candidate function under pressure?
- Will the potential recruit fit the corporate culture?

They may face questions such as "Who is the best manager you ever worked for and why?" or "What is your best friend look like?". The reason for the interrogations is clear: many hired candidates work out badly. The cost of bringing the right person on board is sometimes huge.

Research has shown that most decision makers make their hiring decision in the first five minutes of an interview and spend the rest of the time rationalizing their choice.

The CV is presenting your qualification, skills and attributes to the employer. A CV must be accurate, brief and clear. It must be presentable so that it makes the best impression possible and gets noticed. It should be relevant- targeted to the needs of each particular position.

A good CV should:
- Attract attention
- Create a positive impression
- Present your skills and qualities clearly and concisely

Задание 2. Составьте собственное резюме, используя пример, приведённый ниже:

Peter Townsled
35 Green Road
Spokane, WA 87954
Phone (503) 456 – 6781
Fax (503) 456 – 6782
E-mail petert@aabe.com.
Marital status: Married
Nationality: US

Objective
Employment as a manager in important clothing retailer. Special interest in developing computer time-management tools for in-house use.

Work experience
2005 – Present Jackson Shoes Inc. Spokane, WA
Manager

Responsibilities
• Manage staff of 10
• Provide helpful service to customers concerning shoe choices
• Design and implement computer based tools using Microsoft Access and Excel for staff
• Suggest changes in product offerings on a quarterly basis based on detailed analysis of sales patterns

•   Provide in-house training for new employees as needed

Education
2001 – 2005 Seattle University Seattle, WA
Bachelor of Business Administration
• Four year business administration course focusing on retail work environments

Professional memberships
•Rotary Club Member, Spokane WA
• Young Business Administration Club President 2003-2005, Seattle, WA
Additional Skills
Advanced level skills in Microsoft Office Suite, basic HTML programming, spoken and written proficiency in French

REFERENCES
Available upon request

Задание 3. Прочитайте и переведите текст. Расскажите о правилах написания сопроводительного письма.

How to write a cover letter

Writing a cover letter? We show you how to structure your cover letter, how to personalize it and how to impress the reader so they will invite you for an interview. Learn how to write a cover letter that will impress prospective employers.
Step 1: Write a unique letter
Each cover letter should be unique. What you actually put in the cover letter is completely depended on what the ad is. Use the ad as a guide as to what to put in the cover letter.
Step 2: Personalize you letter
Your cover letter is marked in tone. The great thing is you can really personalize it. Whereas a CV can be more general, the cover letter is really your chance to show them you understand what they say in their ads. These are the things they are looking for – here is you show them that you've got it. So even by reading your cover letter they'll see that you are the candidate: you've read the job, you know what they want and you've got it.
Think about the cover letter in three steps. First of all, make the connection why you are contacting them and what is the job you are applying for. Secondly, what have you got to offer. Show them that you've got it. Use those very words – three to four points to show that you've got what they ask in the ad. Number three – finish with a call to action: you can call them, should they call you? Normally the

ad will tell you so. But give a phrase "Please contact me in this number in case of more information for an interview or I will call you".

Step 3: The perfect layout

Now just to give an example of a basic cover letter so you'll see how easy it is I've done one here. Make the connection. Begin with the job you're applying for. Then go onto your experience and refer specifically to the advert. Keep it short and concise. End with how you expect to next be in communication.

Done.

Vocabulary:

prospective employers – будущий работодатель

to make the connection – установить связь (зд. – указать данные, по которым с человеком можно связаться)

to apply for a job – подавать заявление о приеме на работу

Задание 4. Составьте собственное сопроводительное письмо, используя пример, приведённый ниже:

ABC Company Office Building
55 East 52nd Street 21st Floor
New York, NY 10022
Phone: (718) 222-2222
Grigoriy Ovchinnikov
Ul. Pushkina 6
143350 Moscow
Tel. 777 77 77
grigoriy.ovchinnikov@gmail.com
Moscow, 26.09.2014

Dear Sir or Madam,

I am writing in response to your advertisement on site: work-in-new-york.com dated 25 September 2014. I would like to apply for the position Marketing Manager in your company.

As outlined in my resume, which I have enclosed, I graduated from Financial University under the Government of the Russian Federation in 2010 with a master degree of Economics.

I am currently employed as Assistant Managing Director at Sberbank of Russia, where my duties include the organization of staff and stock, as well as the allocation of budget within the sales department. I am also responsible for overseeing the whole business.

I believe that I would be an ideal candidate for the position you have outlined, as I have had extensive marketing training. I have a number of good

business contact in New York. Finally, I am willing to relocate at short notice, which I understand to be a requirement of the position.

I easily learn new things and I am open to new challenges. I am good at handling stress situations, where one has to act quickly and calmly. I am a creative, articulate person who finds it easy to communicate with others. I can work efficiently both in a team and

I believe my qualifications and experience make me well suited to the position you are advertising. My enclosed CV provides additional details about my background. I thank you for considering my application and am willing to attend an interview at any time.

I look forward to hearing from you.
Yours faithfully,
Grigoriy Ovchinnikov

Задание 5. Составьте устную тему «Устройство на работу».

Контрольное задание

Заполните диалоги подходящими репликами

1

- Good morning, sir.

-……. Come in. Mr. Klimenko, isn't it? Please take a seat..…………

- Five years. I am only leaving because the firm is moving to Sevastopol, but I think a change will do me good.

2

- What do you know about our company? Have you got any questions for me?

- …………

- We plan to expand our activities with English-speaking countries, mainly England, to buy equipment and technologies from there and run training programs here.

- ……………..

- Well, first of all to be responsible for our contacts with English partners. You will need to skillfully negotiate for and buy equipment.

- ………………

3

- So tell me what are your three main strengths?

-………..

- OK. Do you work well under pressure?

- ………..

- Are you a leader, an entrepreneur by nature?

- ……………

- All right. Now, Mr. Black, I am quite prepared to offer you a job with us. You have excellent references from your previous job.

Тема 12: ИНТЕРВЬЮ (AN INTERVIEW PROCESS)

Цели занятия:
1.   Развитие навыков и умений чтения, перевода аутентичных текстов по тематике «Интервью. Правила поведения при собеседовании».
2.   Развитие навыков и умений монологической речи для передачи основного содержания прочитанного текста.
3.   Развитие навыков и умений ведения диалога-расспроса по теме «Интервью», соблюдая нормы речевого этикета.

Задание 1. Прочтите и переведите текст. Обсудите следующие вопросы:
1.   What new steps of preparation for a job interview have you learnt?
2.   Do you know any other steps of preparation for a job interview? Describe them.

How to prepare for an interview

We show you how to prepare for a job interview from how to dress, what to bring to the interview, what kind of interview questions to expect and what kinds of questions you can ask them.

Step 1: Get the details right

Know when and where you're going. Admit some of sides. Really don't be late so be in connection of trial. Try once again how much it will be you can get there. Don't get there too early. Try to be there 10 minutes ahead of time.

Find out who's going to be interviewing you. Is it going to be an office manager? Is it going to be a high chief? What kind of interview to expect? Is it going to be a very structured interview or is it going to be a more relaxed interview?

Make sure you have a job description. Everything in the job interview is going to be based on the job description.

Find out the dress code – dress smart to play it safe. Ask what the dress code is? Is it going to be a suit or is it more relaxed? If in doubt – wear the conservative style.

Step 2: Know your target

Learn what you can about the company. Find out as much as you can about the company before the interview. Go onto the Website. Find out what are the products, what are the services, who is a senior management team, what are the countries are they in, also potentially – the particular department or section you can be working in. Find out as much as you can about them and how they feel into the big picture.

Keep an eye on news in leading weeks for stories about them. There can be a story about them that you can bring to the interview. Then you can look a very-very interested research candidate.

Step 3: Know yourself

Know yourself versus what they want. Find out exactly what kind of candidate they are looking for with what kind of skills, what kind of experience and match them with what you've got. That is the best preparation you can do for the interview. Actually what's more you can prepare – examples, achievements; and use them through out of the interview.

Quantify and qualify yourself. If you are a salesperson – how much did you actually sell, how much are the sales increased. Be very-very specific.

Finally, re-read your CV. The worse thing is saying "Or, I've put it in the CV". That is a killer. Make sure you know yourself and what you've got to offer.

Step 4: Prepare for the obvious questions

Prepare for standard questions: strengths, weaknesses, why do you want the job, why should I hire you etc. There is no excuse for you not having prepared for those ones. So, do almost scripts and go through them even if you have to stand in front of the bathroom mirror. Make sure you know exactly what you are going to answer and prepare yourself well. Script it.

Step 5: Prepare questions to ask them

What would you like to know? What is really important for you. Sit down and think about what to know about the management style, their structure, promotion potential, what you should focus on the first three months, whom you are reporting to etc. Get them talking on their own. This is a good way to get a dialog. Do prepare two or three questions. But do not ask obvious questions you could have found out beforehand on the Website.

Vocabulary:

to prepare for a job interview – подготовиться к собеседованию

structured interview – структурированное собеседование

job description – перечень служебных обязанностей, должностная инструкция

dress code – дресс-код, рекомендуемый стиль одежды

senior management team – старший руководящий состав

Задание 2. Переведите представленное ниже интервью:

Employer: Good morning! How are you?

Candidate: Fine, thank you very much.

Employer: We made this appointment to speak about your personality traits and your professional skills. Please, tell us about yourself.

Candidate: I`m a very friendly person. Love to people helps me at solving different problems. I am responsible and diligent. I`m really good at working with personal computers and I`m very interested in programming (software engineering). When I was a university undergraduate I was twice awarded the second prize in the database programming competition.

Employer: Can you explain us, why should our company hire you?

Candidate: I can work very well with other people, because I`m a real team player. My qualification and professional skills help me to get any job done.

Employer: You mean you have never had a confrontation with your colleagues at your last place of work?

Candidate: No I haven`t. I always resolved difficult problems without confrontation. I`m a very hard worker.

Employer: Tell us about you main negative and positive traits.

Candidate: I am outgoing optimist. I like people and I enjoy being around them. What about my negative traits… Well, I like to discuss the newest gadgets with my friend Paul very much, because they are a very important part of my life. Often we are fully unmindful of time and depress our relatives.

Employer: Maybe this side of your character exercises significant influence on your private life but it cannot be bad for your professional abilities.

Задание 3. Соотнесите части предложений:

1.   Wear the conservative style   a.   about the prospective company before the interview.
2.   Everything in the job interview b.   not having prepared for obvious questions.
3.   Find out exactly what kind of candidate   c.   beforehand on the Website.

4.   Try to be at the job interview   d.   is going to be based on the job description.
5.   Keep an eye on news in leading weeks for stories about the company
e.   the company is looking for.

6.   Find out as much as you can   f.   if you doubt about what the dress code is.
7.   There is no excuse for you   g.   10 minutes ahead of time.
8.   Do not ask obvious questions you could have found out h   to look a very interested research candidate.

Контрольное задание:

Составьте интервью, используя приведенные ниже выражения.
How are you? I'm very well, thank you. – Как ваши дела? Спасибо, прекрасно.
Thank you. It's nice to meet you too/at last. – Спасибо. Рад встрече с вами.
I can't believe the weather at the moment! I know. It's awful, isn't it? – Погода совершенно неожиданно переменилась! Да. Она ужасная, не так ли?

Is there somewhere I could leave my umbrella? I got caught in the rain. – Здесь где-нибудь можно оставить зонтик? Я попал под дождь.

I'm very sorry I'm late. I was planning to be here over an hour ago, but my train was cancelled. – Извините, я опоздал. Я планировал быть здесь час назад, но мой поезд задержали.

I was just admiring the office. – Мне очень нравится ваш офис.

That's quite all right. / That's okay. – Все нормально. / Нет проблем.

Do you think I could have a glass of water while I'm waiting? – Можно мне стакан вода, пока я жду?

Do you have a company brochure I could have a look at while I'm waiting? – Можно мне посмотреть брошюру о вашей компании пока я жду, если у вас есть?

Are there many other candidates scheduled for interviews today? – На сегодня много записалось кандидатов?

I had terrible problems parking here. Is it always this busy? – Здесь совершенно негде припарковаться. Здесь всегда так много машин?

I'm afraid I'm not feeling very well. Could I sit down for a few minutes? – Мне что-то не хорошо. Можно присесть на несколько минут?

No thank you. I'm fine. – Нет, спасибо. Со мной все хорошо.

ТЕМА 13. ОРГАНИЗАЦИЯ НАУЧНО-ИССЛЕДОВАТЕЛЬСКОЙ РАБОТЫ МАГИСТРАНТА (THE ORGANIZATION OF RESEARCH WORK OF A MASTER STUDENT)

Цели занятия:

1. развитие умений и навыков чтения и перевода профессиональных текстов по теме «Организация научно исследовательской работы магистранта»;

2. развитие умений и навыков межличностного взаимодействия на иностранном языке в профессиональной сфере;

3. развитие умений и навыков аналитической переработки информации на иностранном языке в профессиональной сфере;

4. развитие навыков и умений употребления в речи различных типов сослагательного наклонения.

Задание 1. Прочитайте и переведите текст.

Scientific work

It is a well-known fact that any country must pay much attention to the development of science. In Russia we also have hundreds of research institutes and scientists usually combine research work and teaching. Research work is carried out at every higher educational institution and great attention is paid to make students familiar with the latest scientific and technical achievements. Student research work is one of the most important means to improve the quality of masters' training, to cultivate master students' creative abilities and independent thinking thereby contributing to the development of the society.

The students of our University have every opportunity to carry out research work because the laboratories and workshops are equipped with all necessary devices, computers and up-to-date machines. Many of our teachers and lecturers are considered to be the leading scientists and they help the students in doing their research work. While doing research we are trained to use our knowledge rationally and effectively and learn modern scientific methodology.

Though the students of our University have quite favorable conditions for their scientific work they also know that they should work hard and devote much time and attention to achieve necessary scientific results. Everything the students do at the University is very important for their development, for their future work, for becoming good specialists and researchers.

Any scientific work is carried on in accordance with scientific method. The steps in scientific method can be listed as follows:
- Recognition of the problem.
- Collection of information (facts or data).
- Analysis of data and setting up a hypothesis.
- Performance of test experiment.

- Substantiation, modification or abandonment of the hypothesis.

Thus any scientific work begins with recognition of the problem. A researcher must study the problem thoroughly. He gathers the known facts about the problem and analyses them. Then he tries to extend his thinking beyond the known facts and set up a hypothesis. Without hypothesis investigation lacks purpose, and direction. The hypothesis must be proved experimentally. But at first, a researcher must design (plan) his experiment. Only experiment may show whether hypothesis is true or not, whether a scientist should abandon it or advance it to the rank of a theory. Without theories there is no science. A good theory not only explains but helps to discover yet unknown things. The validity of any theory can be tested in practice. The results of the research become completely scientific when they are published. A scientific work is carried out under the supervision of a scientific adviser with whom a master student or researcher discusses the results obtained. In order to gain the degree of a Master, a student must devote two years to study and research and then defend a thesis.

Every year a special conference devoted to students' scientific activities takes place at the University and the students have a good chance to tell the people attending the conference about their work. Interesting results achieved in the process of the research will be described in the articles. And the best articles are usually published in the University book of collected student essays. It is a good opportunity for students to try their hands at writing scientific papers. Some of the students are so much engrossed in their research that they decide to take the scientific problems they work at as themes of their master thesis.

To write a master thesis a lot of work has to be done. Students must read and study quite a number of scientific magazines and make plenty of experiments under the supervision of teachers and professors. Students spend a lot of time in the laboratories discussing plenty of ideas and making experiments.

After graduating from the University some of the students try to take post-graduate courses for the Candidate's degree. The minimum requirements for the Candidate's degree include qualifying exams in specialized field, philosophy and English. That's why all students are quite aware of the necessity to study English. While preparing for the qualifying exam in English it's necessary to attend the tutorials regularly and work hard at the language. Students usually read and translate various scientific articles and then discuss the problems raised in these papers. That's the way they can master English both for their final examinations and to follow the latest information in the specialized field and to keep abreast of the science.

Active vocabulary

master student – магистр

to make smb. familiar with smth. – познакомить, ознакомить кого-то с чем-то

devote – посвящать

carry out a research work – проводить н/и работу

generalize – обобщать

perform an experiment – выполнить эксперимент
recognition of the problem – постановка проблемы
scientific adviser – научный руководитель
set up a hypothesis – выдвинуть гипотезу
substantiate – доказать, подтвердить
supervision – наблюдение, руководство
to be engrossed in – быть поглощенным, увлеченным ч-н.
to try one's hands at – пробовать свои силы в ч-л.
post-graduate course - аспирантура

Задание 2. Ответьте на следующие вопросы.

1. Do scientists combine research work and teaching?
2. What institutions is research work usually carried our at?
3. What opportunities do the students have to carry out their research?
4. In what way can the students achieve scientific results?
5. Why is it important for the students to carry out work dealing with some scientific problems?
6. Why do the students try their hands at writing articles?
7. How do the students work at their undergraduate and graduation papers?
8. Where can the students collect additional materials for their essays?
9. Where do the students usually report about their scientific activities?
10. What do some students do after graduating from higher educational institutions?

Задание 3. Дополните следующие предложения.

1. Research work is carried out at …
2. Student research work is one of the most important means to …
3. The students of our University have every opportunity to carry out research because…
4. While doing research students are trained to …
5. All master students are usually busy with …
6. While working at their essays master students have to …
7. Every year a special conference takes place at the University where the students …
8. To solve a scientific problem the students have to …
9. During students' practical work they have a good chance …
10. It is a good opportunity for the students to try their hands at …

Задание 4. Согласитусь или не согласитесь со следующими утверждениями, используя следующие разговорные фразы.

- Oh, yes, you are right. - Exactly! - Absolutely so! - That's the point! - Oh, no, you are wrong. - On the contrary! - I'm afraid you're mistaken. - You've got it wrong.

1. Any country must pay much attention to the development of science.
2. The students of our University don't have any opportunity to carry out research.
3. Our teachers and lecturers don't help the students in doing their research work.
4. The students of our University should work hard and devote much time and attention to achieve necessary scientific results.
5. To solve any scientific problem a lot of work has to be done.
6. Students don't work under the supervision of their teachers and professors.
7. During their practical work students have a good chance to have a lot of fun.
8. Interesting scientific results will be described in the articles.
9. The minimum requirements for the Candidate's degree include qualifying exams in specialized field, history and mathematics.
10. There's no need for a researcher to follow the latest information in the specialized field and to keep abreast of the science.

Задание 5. Перевести предложения на английский язык.

1. Научно-исследовательская работа магистров является одним из наиболее важных способов улучшения качества подготовки специалистов.
2. Студенты нашего университета должны упорно работать и посвящать много времени и внимания научно-исследовательской работе.
3. При проведении исследовательской работы студентам приходиться читать много научных книг и статей, а также проводить много опытов.
4. Студенты нашего университета всегда принимают активное участие в научных конференциях.

Задание 5. Составьте план текста задания 1. Перескажите текст согласно плану.

Задание 7. Расскажите о своей исследовательской работе, пользуясь планом.

1. I graduated from … in…..
2. I defended my graduation paper on the topic …
3. I received the … degree in the sphere of ……
4. After graduating I started working at….. as …..

5. I have been working at … as … for … years.

6. In …. I started my research work/ decided to continue my education and entered the post-graduate courses.

7. Now I am a graduate student/ Master student of RSTU and continue to work actively at the problem of…

8. The subject (тема) of my research work is…

9. My scientific advisor/supervisor is …

10. The subject of the research work is relevant because…

11. The goal/problem of my work is…

12. According to the goal of my scientific research the following tasks were pointed out:

1) to analyze...

2) to reveal...

3) to determine …

13. The analysis of … will be carried out in this project.

14. Great attention will be paid to….

15. We have been carrying out the research for ….

16. At the present stage of our research work the main tasks are as follows…

Задание 8. Ознакомьтесь с грамматическим материалом по теме «Виды наклонений».

English verbs have three moods: indicative, imperative and subjunctive. Mood is the form of the verb that shows the mode or manner in which a thought is expressed.

1. Indicative Mood: expresses an assertion, denial, or question: Little Rock is the capital of Arkansas. Ostriches cannot fly. Have you finished your homework?

2. Imperative Mood: expresses command, prohibition, entreaty, or advice: Don't smoke in this building. Be careful! Don't drown that puppy!

3. Subjunctive Mood: expresses doubt or something contrary to fact. Modern English speakers use indicative mood most of the time, resorting to a kind of "mixed subjunctive" that makes use of helping verbs: If I should see him, I will tell him. Americans are more likely to say: If I see him, I will tell him.

The verb may can be used to express a wish: May you have many more birthdays. May you live long and prosper.

The verb were can also indicate the use of the subjunctive: If I were you, I wouldn't keep driving on those tires. If he were governor, we'd be in better fiscal shape. "If I were rich, I'd have the time that I lack to sit in the synagogue and pray."

Задание 9. Ознакомьтесь с грамматическим материалом по теме «Виды наклонений» в учебно-методическом пособии Неличные формы

глагола и сослагательные наклонения: учебное пособие по грамматике для студентов II курсов всех факультетов/ В.И.Котлярова, Л.А.Свиридова; РГУПС.– Ростов н/Д, 2007. – С.31-35.

Задание 10. Переведите следующие предложения на русский язык.

Examples:

It is important (necessary/desirable/required/possible…) that the research (would) be carried out.

Важно (необходимо/желательно/возможно…), чтобы исследование было проведено.

1. It is desirable that this method should be used.
2. The engineer proposed that a new alloy be used in the device instead of a rare metal.
3. The scientist suggested that he would wait for a number of a new data obtained before making the experiment.
4. It is necessary that atomic energy be used only for industrial purposes.
5. The instruments were packed carefully lest they should be damaged during transportation.
6. It is essential that scientists meet regularly to exchange views and information.
7. They suggested that the new means of communication should be discussed at once.
8. It is important that the conference cover a wide range of questions concerning the advantages of satellite communication.
9. They required the sophisticated equipment, so that they could investigate these phenomena.
10. Make exact calculations lest you should fail with your experiment.

Задание 11. Выполните задания в учебно-методическом пособии Неличные формы глагола и сослагательные наклонения: учебное пособие по грамматике для студентов II курсов всех факультетов/ В.И.Котлярова, Л.А.Свиридова; РГУПС.– Ростов н/Д, 2007. Упр. 1-3 стр. 35-36, упр.9 стр.38.

Задание 12. Составьте устную тему «Я – магистрант».

Контрольное задание

Переведите на русский язык.

1. He demanded that the problem should be carefully studied.
2. It is important that he should give his consideration on this subject.

3. It is important that modern means of communication (should) meet the requirements of the scientific research.

4. It is highly desirable that more students should be involved into scientific work.

5. We demand that such data (should) find application on further work.

6. It is necessary that a new method should be observed.

7. He advised that the question (should) be discussed immediately.

8. We insisted that such actions might provide some information about the event.

9. The professor demanded that the students' work parameters (should) be taken into consideration.

10. It is demanded that the researcher submit his paper on time.

Тема 14: МЕТОДОЛОГИЯ НАУЧНОГО ИССЛЕДОВАНИЯ (METHODOLOGY OF SCIENTIFIC RESEARCH)

Цели занятия:

1. изучить лексику необходимую для обсуждения целей, задач и методов исследования, а также сбора и анализа информации по теме исследования;

2. активизировать употребление новой лексики в устной и письменной речи;

3. освоить основные языковые клише, употребляемые в обсуждении методов и логики научного исследования, актуальных проблем и задач в науке;

4. развивать навыки поиска и анализа научной информации.

Блок 1. Field of Science and Research

Задание 1. Изучите лексику необходимую для обсуждения научного исследования. Сколько слов и выражений Вам известно? Переведите остальные слова и выражения на русский язык, пользуясь словарем.

to do/to carry on/to carry out/to conduct research
to contribute to/to make a contribution to
to influence/to affect/ to have an effect on/ upon
to study/to make studies/to investigate/to explore
to put forward an idea
to suggest an idea/a theory/a hypothesis
to advance/to develop/to modify a theory
to predict/to forecast/to foresee
to accumulate knowledge
field of science/research
a new area of research
current branch/field of research
the latest/ recent achievements/developments/advances
an (a) outstanding/prominent/world-known scientist/researcher

Задание 2. Составьте 6 предложений на английском языке со словами и выражениями из задания 1.

Задание 3. Ответьте на вопросы, давая развернутые ответы.

1. What is your field of science/research?
2. What are the current issues in your field of science/research?
3. Have new areas of research appeared in recent years?
4. What is your particular area of research?

5. What are the latest achievements in your field of science/research?

6. Have any fundamental discoveries been made in your field of science/research in recent years?

7. Can you name some outstanding researchers in your field of science? What contribution have they made?

8. Do achievements in your branch of science/research influence everyday life? In what way?

8. What further developments can you predict in your field of research?

Задание 4. Дополните предложения и обменяйтесь информацией об области ваших научных исследований.

1. I do research in the field of … .
2. It is the science/a comparatively new branch of science that studies… .
3. The field of science/research that I'm concerned with gathers knowledge about …
4. Major developments include advances in … .
5. Remarkable advances have been made in … .
6. The branches of science contributing a lot to progress in my field of research are
… .
7. My current field of science/research is … .
8. It's difficult/not difficult to foresee/forecast/predict … .

Задание 5. Составьте диалог-обмен информацией об области ваших научных исследований, актуальных вопросах в этой сфере.

Блок 2. Research Problem

Задание 1. Изучите лексику необходимую для обсуждения проблемы научного исследования. Сколько слов и выражений Вам известно? Переведите остальные слова и выражения на русский язык, пользуясь словарем.

the reason for the interest in the problem
due to/ owing to/ thanks to/ because of
to arise from
to increase/ decrease considerably
to be the subject of special/ particular interest
to be studied comprehensively/thoroughly/extensively
to be only outlined
to be mentioned in passing

to be concerned with/ to be engaged in / to deal with/ to consider the problem of

to be interested in

to be of great/ little/ no interest/ importance/ significance/ value/ use

to take up the problem

to work on the problem

to follow/ to stick to the theory/ hypothesis/ concept

to postulate

to differ/ to be different from

a lot of/ little/ no literature is available on research problem

a lot of/ few publications are available on research problem

Задание 2. Составьте 6 предложений на английском языке со словами и выражениями из задания 1.

Задание 3. Ответьте на вопросы и обсудите проблему вашего научного исследования.

1. What is your research problem?

2. What problem is of particular interest in your research?

3. What is the subject of your research?

4. Why has the interest in this problem increased considerably in recent years?

5. Do you follow/stick to any theory/hypothesis/concept? What is it?

6. What concept is your research based on?

7. How does your research differ from other studies on the same problem?

8. Are there many publications available on the problem of your research?

9. Is your research problem described comprehensively/ thoroughly/ extensively in

literature?

10. Is the problem of your research only outlined/ mentioned in passing?

11. What are the main aspects of your research problem that have already been considered?

Задание 4. Дополните предложения и сообщите информацию о проблеме вашего исследования группе.

1. At present/ now/ currently I am studying the problem of … .

2. The problem I am studying is concerned with … .

3. There are a lot of/ few/ no publications on the problem of … .

4. The literature available on the problem of my research only outlines/ mentions in passing/ thoroughly/ extensively describes such aspects as … .

5. We have taken up the problem of … to prove/investigate …

6. In solving our problem we follow the hypothesis that … .

Задание 5. Составьте диалог-обмен информацией о проблеме научного исследования.

Блок 3. Purpose and Methods of Scientific Research

Задание 1. Изучите лексику необходимую для обсуждения цели, задач и методов научного исследования. Сколько слов и выражений Вам известно? Переведите остальные слова и выражения на русский язык, пользуясь словарем.

purpose/ aim/ objective/ goal/ target
a method/ a technique/ a procedure
detection /identification/ observation
measurement/calculation/ computation/ approximation
consideration/ generalization/ deduction/ assumption
modelling/ simulation
advantages/ merits/ strong points
disadvantages/ shortcomings/ limitations/ weak points
accurate/ precise
accuracy/ precision
reliable/ valid/ conventional/ effective/ useful/ valuable
results/ information/ data/method …
to make an experiment/ analysis
to reveal/ to find/ to provide evidence
to confirm/ to prove findings/ the data obtained …
to study/ to examine
to collect data
to refine the results
to create
to improve
to work out /to develop/ to design
to verify/ to check
to approve/ to disprove an assumption
to use/ to employ/ to apply results/ data …
to allow/ to permit/ to provide
to have much promise/ to be promising
to come into use

Задание 2. Составьте 6 предложений на английском языке со словами и выражениями из задания 1.
Задание 3. Ответьте на вопросы и обсудите тему, цель и методы вашего научного исследования.

1. What is the subject of your current research?
2. What is the purpose of your research?
3. What methods do you employ? Why?
4. What are the advantages of the method(s) you use over other methods and techniques?
5. Is this method only now coming into use? Is it new?
6. What does the method consist in? What operations does it include?
7. Do you find the method reliable/ precise? Why?
8. How long has your current research been under way?
9. How much time will it take you to complete your research successfully?

Задание 4. Дополните предложения и сообщите информацию о цели вашего исследования и методах, которые вы применяете.

1. Currently I am … .
2. I am making a set of experiments/ analyses in order to … .
3. The experiment/ analysis is performed with a view to … .
4. The purpose of my experiments/ analyses is to … .
5. We undertake a set/a series of experiments hoping to … .
6. In our current research we … the method of … .
7. The method/ technique allows/ permits … to … .
8. The method /technique makes it possible to … .
9. This is, without any doubt, the most … and … method.
10. The method proves to be … .

Задание 5. Составьте диалог-обмен информацией о цели вашего исследования и методах, которые вы применяете.

Задание 6. Прочитайте монолог-сообщение магистранта и озаглавьте его. Ответьте на вопросы.

1. What is her field of scientific research?
2. What did she study when she was a Bachelor?
3. What is the subject of her current research?
4. What is the subject-matter of her scientific research work?
5. The nature of interpretation falls out of her scientific interest, doesn't it?
6. What are the problems in the field of her scientific research?
7. What philosophical concepts and approaches make the basis of her research?
8. What methods are employed to carry out scientific research?

I'd like to say a few words about my scientific research. I major in philosophic anthropology and philosophy of culture. I proved my Bachelor's

degree in Philosophy this year. I made up my mind to take up Master's degree without procrastinating. So, in summer I took my entrance exams successfully. Now I'm a first-year student of Master's school in the University of Humanities.

When I was a Bachelor, I studied the ontology of myth and human imagination. But currently I have switched over to the field of art. I should say that my mythological thinking appears to be useful for studying the phenomenon of art.

The subject of my current research is "Idea of Art in Ancient and Medieval Philosophy". The subject-matter of my scientific research work is the phenomenon of art in its anthropological and cultural dimensions. I don't only focus on the aesthetics in art but do my best increase the horizons of my research.

It's a well-known fact that the Art is a specific aspect of human life. Art is a diverse range of human activities and the products of those activities. Until the 17th century, art was referred to as any skill or mastership.

Philosophy of art within Philosophy of Culture and Philosophical Anthropology concerns the relationships between man, culture and nature. I am interested in the nature of interpretation, the ontology of pieces of art, aesthetic experience and artistic value.

My scientific advisor is professor Makarov.

He deals with the problems of history and tradition in culture. He is also interested in philosophy of art. He delivers lectures on art once a month in different museums at home and overseas. About a hundred of his articles and some scientific papers and textbooks are published. He has got some followers who work on the same issues.

As for the problems in the field of my scientific research they involve such basic ones as: firstly, ontological grounds of art, secondly, problem of criteria of art, because it and its aspects, e.g. beauty, cannot be reduced to any basic set of features, finally, problems of current status of modern art generally and of contemporary art particularly. I distinguish the modern art and the contemporary art. The contemporary art is the postmodern art, which includes within modern art as art produced at the present period in time.

I think, today it is necessary to revise the art phenomenon. Nowadays the technical environment carries out dehumanized function. Art is engaged in reproduction of the person. It is capable to oppose itself to the technogenic environment.

I employ such philosophical concepts and approaches as platonism, neoplatonism, structuralism, existentialism, hermeneutic and some other.

The main method of my research work is hermeneutics. I also use Socratic method. It is a form of discussion between individuals, based on asking and answering questions to stimulate critical thinking. Also I'm going to use a case method.

Задание 7. Подготовьте устное высказывание о вашем научном исследовании (проблеме, цели и задачах, методах), дополнив предложения,

приведенные ниже, и/или внося необходимые изменения в них. Выступите перед группой с этим высказыванием.

1. I do research in the field of … .
2. It is the science/a comparatively new branch of science that studies… .
3. The field of science/research that we are concerned with gathers knowledge about …
4. Major developments include advances in … .
5. Remarkable advances have been made in … .
6. The branches of science contributing a lot to progress in our field of research are … .
7. The subject of our current research is …
8. Our research is based on the concept …
9. The purpose of my experiments/ analyses is to … .
10. That's why I set the following research tasks … .
11. We undertake a set/a series of experiments hoping to … .
12. At present/ now/ currently I am studying the problem of … .
13. The problem I am studying is concerned with … .
14. Our research differs from the others on the same problem in the way of …
15. The problem of our research evokes much interest in scientific circles because …
16. The solvation of the problem will enable … .
17. There are a lot of/ few/ no publications on the problem of … .
18. The articles in the field of my research are mainly published in … .
19. We have taken up the problem of … to prove/investigate … .
20. The problem of our research is … by numerous/few authors.
21. In solving our problem we follow the hypothesis that … .
22. In our current research we … the method of … .
23. The method/ technique allows/ permits … to … .
24. This is, without any doubt, the most … and … method.
25. Our current research has been … months under way.
26. We have obtained some … results.
27. Some meaningful scientific data and considerations of our research can be published in … .
28. In the nearest future we are planning to … .

Контрольное задание

Задание 1. Подготовьте справочную информацию (1000 – 1200 печатных знаков) об актуальных вопросах и проблемах в области вашего исследования. Сделайте сообщение об этом.

ТЕМА 15. ВИДЫ НАУЧНЫХ РАБОТ (TYPES OF RESEARCH PAPERS)

Цели занятия:
1. активизация лексики по теме «Виды научных работ»,
2. развитие умений и навыков чтения и перевода научной литературы по теме «Виды научных работ»;
3. развитие и углубление умений и навыков написания научных статей;
4. развитие умений и навыков лингвистического оформления и учета стилистических особенностей научных работ;
5. развитие умений и навыков ведения бесед на темы профессиональной и научной тематики на английском языке,
6. закрепление навыков заполнения бланков (заявка на участие в конференции).

Задание 1. Прочитайте и переведите текст.

Types of scientific publications (monograph, article, theses, presentation, etc. The structure of the article, linguistic design and stylistic features.

Vocabulary:

master thesis – магистерская диссертация
as a rule – как правило
a scientific publication – научная публикация
a scientific article – научная статья
practical importance – практическая значимость
definition – определение, дефиниция
a summary – резюме, краткое обобщение
formulation of the scientific problem - формулировка научной проблемы
scientific research – научное исследование
presentation – презентация
conclusion – заключение
references – ссылки
annotation – аннотация

Monograph is a scientific book edition of the specific study of a problem or topic that belongs to one or more authors.

Article is a creation placed in a scientific journal or collection of works devoted to the study of a specific problem with a certain scientific and practical importance.

Master thesis is an essential individual result of the entire master studies, based on which, the student is awarded with the master's degree.

Thesis abstract is a scientific publication of the author's study abstract in the form of the booklet, which serves for the scientific degree awarding.

Preprint is a scientific publication with the materials of the preliminary nature, which are published before the main publication of them.

Abstracts, conference proceedings is a non-periodic collection of the scientific conference presentations, recommendations, and decisions.

Scientific article

The scientific article is one of the main types of publications. It contains a summary of the intermediate or final results of the scientific research, highlights the specific separate question on the topic of the thesis. The author captures the scientific priority in it, makes the material to be accessible to the specialists.

The optimum amount of a scientific article is 0.5 author sheets (up to 12 pages of text, typed on a computer through the 1.5 line spacing, font of size 14 pt).

The article should have the following structural elements:

1. Introduction, which contains the formulation of the scientific problem, its urgency, relation to the important tasks of science and the national economy of the state, the importance for the development of a particular science branch or practice. This is usually the first paragraph or 5-10 lines. The purpose of the introduction is to explain to the reader the main task set by the author of the article.

As a rule, the introduction should include:
• definition of a scientific hypothesis;
• a detailed explanation of the reasons, why the study was initiated;
• disclosing the level of the topic relevance.

2. Analysis of recent research and publications, which have inferred this problem solving, and which are important for the author; existing views on the issue; difficulties in the development of this issue, highlighted outstanding issues within a common problem (0.5 - 2 pages of printed text).

3. The wording of the article purpose (problem), which classifies the main idea of this publication. This idea has to be significantly different from the existing ones, be complementary or deepen the already known approaches. It can be an introduction to the science of new facts, conclusions, recommendations, laws, or can clarify the previously known facts, but which are insufficiently studied.

4. Presentation of the content of the study, i.e., the main part of the article. It highlights the main points and results of the scientific research, personal ideas, thoughts, obtained scientific facts, revealed patterns, communication, trends, experimental program, methods to obtain and analyze the factual material, the author's personal contribution to the achievement and implementation of the main conclusions, etc. (5 - 8 pages).

5. Conclusions, in which the main conclusion of the author is formulated, the content of the conclusions and recommendations, their implications for the theory and practice, social importance. The conclusions briefly outline the prospects for further research on the subject (1/3 page). It is necessary to make a brief conclusion, whether the declared hypothesis was confirmed, or not.

6. References, where bibliographic descriptions of the sources and literature are placed, which are referenced in the text.

7. The annotations are added to the article in Russian and English languages.

There are certain stylistic and format issues that scientific article, thesis and dissertation writers must follow. However, with some exceptions there is no one-size-fits-all format to which all theses and dissertations must conform. Instead, it is expected that authors generally should be guided by disciplinary-based standards regarding academic writing and the guidance of their supervising committees. While the details of how the elements of a thesis or dissertation are written or assembled are important, it is critical that all stylistic and format decisions be consistently applied throughout the document and these decisions follow disciplinary norms.

Задание 2. Ответьте на вопросы:

1. Have you already obtained any research results?
2. What are the main results of your current research?
3. Has your research been a success?
4. Have you succeeded in receiving extensive data?
5. Are the data/observations you have obtained sufficient to formulate your final

conclusions?
6. What is the topic of the paper you are going to present?
7. Why are you interested in this particular topic?
8. Do you always prepare for presentations?
9. What recommendations for making oral presentations do you find most helpful?
10. Which ones do you always follow?

Задание 3. Предложите русские эквиваленты вводных речевых моделей:

In this paper I would like to talk about the concept of …
The object of this paper is to show …
To begin with, let us imagine that …
As many of you know …
First of all I would like to …
I am sure I don't have to remind you that …
I am very pleased to have this opportunity to …
In my paper I want to highlight …
In the introduction to my paper I would like to …
I want to begin my presentation with …

Задание 4. Дополните следующие предложения.

1. The research has been under way for a year and I've got … .
2. At present a lot of work is being done to … .
3. The results we have … so far cannot be used to … .
4. Unfortunately, we have failed to … but succeeded in … .
5. The findings prove to … .
6. The evidence appears to … .
7. We have obtained sufficient data to … .
9. We have come to the conclusion that … .
10. Every year conferences … in our university.

Задание 5. Работа в парах. Спросите и сообщите информацию о ваших текущих исследованиях, а именно о ее целях и методах, которые вы используете. Используйте следующие речевые образцы:

1. Currently I am … .
2. I am making a set of experiments/ analyses in order to … .
3. The experiment/ analysis is performed with a view to … .
4. The purpose of my experiments/ analyses is to … .
5. We undertake a set/a series of experiments hoping to … .
6. In our current research we … the method of … .
7. The method/ technique allows/ permits … to … .
8. The method /technique makes it possible to … .
9. This is, without any doubt, the most … and … method
10. The method proves to be … .

Задание 6. Разыграйте ситуации, используя формулы научной коммуникации:

1. Two post-graduate students are participating in an international conference. There they get acquainted and talk about the problems of their research, discuss the progress in their field of science and its influence on life today.

2. Two post-graduate students are sharing information about new approaches and developments in their research areas. They talk about the contributions made by other scientists and discuss publications available on their research problems.

3. Two young researchers are discussing their current research, expressing particular interest in the objectives of the research, and describing the methods they use.

4. You have a poster presentation at the conference. Another participant is interested in your topic. Tell him about the main stages of your research, present the results obtained, and give a short explanation of the main findings.

5. You are interested in your colleague's research and his latest findings. Ask him/her about the difficulties he/she faced with in carrying out research (experiments, analyses), and about the progress he/she has made.

6. Your fellow-student has never participated in a conference. He is eager to know about your experiences. Tell him what the most difficult thing for you was and what you really enjoyed.

7. You are a chairperson opening a Students' Annual Conference. To do it you are given five minutes.

8. You submitted a paper to the organizing committee of an international conference and it was accepted. Today you are given the floor to present your research data. The time limit is ten minutes. Give your presentation.

Formulas of Scientific Communication

Establishing contacts: I'm glad you've asked me that question.
Agreeing: Yes, indeed.
I think you are entirely right.
I agree that…
That's just what I think.
Disagreeing: I am arguing against…
I would object just a little…
I object to…
I wish I could agree with you but…
Expressing surprise: It is rather surprising…
It is unbelievable…
I am puzzled by…
I wonder about…
I find it hard to believe that…
Expressing uncertainty: It seems unlikely that…
I have doubts about…
I am not at all sure about…
I am not certain…
I am doubtful whether…
I have been rather puzzled by…
I doubt it.
Making contribution: In connection with … I would like to add …
Let me add that…
In addition, I would like to mention…
I would add that…
Calling attention: I want to point out that…
I would like to note…
I would like to stress the importance of…
It is worth pointing out that…
I would like to draw/ call your attention to…

Making assessment: The paper raises an important question …
This method is particularly important because…
The paper demonstrates how important it is to…
These results/ data are of particular interest.
Starting a conversation: As far as I know…
What I have in mind is that…
Making remarks: I'd like to make a comment on …
I would like to comment on…
I have a point to make.
Provoking arguments: Would you agree with…?
There seems to be some contradiction betweenyour points of view. Does that
mean you
think…?
Asking for details/classification:
Could you be more specific about…?
I am not clear about…
Could you give us some more facts to back that up, please?
Introducing opinions/attitudes:
Well, I'd like to say that…
What I think is…
Delaying an answer Well, let me see…
Well, now…
That's a good question…
Oh, let me think for a moment…
It is rather difficult to answer this question …
It's difficult to give you an exact answer, but…
I'm not too sure, but…
I've no idea, I'm afraid.
Avoiding answering: I have no particular theory for this fact, but …
I'm terribly sorry, I really don't know.
Actually, I don't know …
I'd rather not answer that, if you don't mind.

Задание 7. Заполните заявление на участие в конференции.

APPLICATION FOR PARTICIPATION IN THE CONFERENCE

Surname _____
First name_____
Position _____
Name of institution / educational institution_____
Degree _____
Title _____
Telephone, E-mail: _____

Home Address _____

Research adviser (name, academic degree, academic rank, position, educational institution (institution)_____

Co-author _____

Theme reports _____

Section _____

Demand on accommodation _____

Report, to participate as a listener (underline)

Would you like to publish thesis? _____

Signature   Date

Задание 8. Составьте устную тему «Виды научных работ».

Контрольное задание

Дополните следующие предложения:

1. This year I … in the conference which was held …
2. I had to … the abstract covering the problem of …
3. The time limit was … and I had ten minutes to …
4. My report … the problem which … much attention.
5. Of … interest were the reports presented by X and Y.
6. I … in understanding English, because I find my English …
7. Let me begin with …
8. The first thing I want to talk about is …
9. The subject that I will discuss is …
19. During the past decade there has been increasing research into … .
11. In some theoretical studies … .
12.. … were able to provide a fully generalized, compact simultaneous solution to … .

Тема 16: ВЫСТУПЛЕНИЕ ПО ТЕМАТИКЕ НАУЧНО-ИССЛЕДОВАТЕЛЬСКОЙ ДЕЯТЕЛЬНОСТИ (PRESENTATION OF/ REPORT ON THE SUBJECT OF SCIENTIFIC RESEARCH)

Цели занятия:

1. изучить лексику необходимую для подготовки выступления по тематике научного исследования, а также проведения презентации материалов по теме исследования;

2. активизировать употребление новой лексики в устной и письменной речи;

3. освоить основные языковые клише, употребляемые для проведения выступления по теме исследования;

4. развивать навыки и умения пользования основными приемами аннотирования научных статей.

Блок 1. Conference Participation

Задание 1. Изучите лексику необходимую для участия в научной конференции по теме вашего исследования. Сколько слов и выражений Вам известно? Переведите остальные слова и выражения на русский язык, пользуясь словарем.

a meeting/a session
a plenary meeting/the opening ceremony
a speaker
a chairman/a chairwoman/a chairperson
to call upon someone/to give the floor to someone
to set up/to fix the time limit
to break the time limit
to call attention to the time limit
to stimulate discussions
to ask somebody a question
to call for questions
to submit abstracts/ to present papers/ to give a poster presentation
to take part in/ to participate in/ to attend a conference
to take the floor
to keep/ to stick to the point
to digress from the subject
to have a good/ poor knowledge/ command of English
to find the knowledge of English adequate/ inadequate to …
to find English hard to follow
to fail to understand reports/ questions in English

Задание 2. Составьте 6 предложений на английском языке со словами и выражениями из задания 1.

Задание 3. Ответьте на вопросы и обсудите участие в научных конференциях.

1. Have you ever participated in international conferences/ symposia/ congresses?
2. What was the last conference you took part in?
3. Where was the conference held?
4. What problems were considered and discussed?
5. How many participants attended the conference/session/ workshop?
6. Which paper or presentation attracted special attention and was of particular
interest for you?
7. What problem did it deal with?
8. What was your presentation about?
9. What was your time limit?
10. Have you ever present a paper at the conference in English?
11. Do you find your English sufficient/ adequate to participate in international
conferences?
12. Do you think you have a good/poor knowledge of English?
13. Why is it necessary/ important for a scientist to know foreign languages nowadays?

Задание 4. Дополните предложения и поделитесь опытом участия в научных конференциях.

1. Every year conferences … in our university.
2. This year I … in the conference which was held …
3. I had to … the abstract covering the problem of …
4. The time limit was … and I had ten minutes to …
5. My report … the problem which … much attention.
6. Of … interest were the reports presented by X and Y.
7. I … in understanding English, because I find my English …

Задание 5. Составьте диалог. Поделитесь мнениями об участии в научной конференции. Обсудите организационные особенности, повестку, пленарное заседание, а также доклады и презентации участников.

Блок 2. Presenting a Paper

Задание 1. Изучите лексику необходимую для проведения презентации по теме вашего исследования. Сколько слов и выражений Вам известно? Переведите остальные слова и выражения на русский язык, пользуясь словарем.

to present/ read a paper
to remind of …
to give an explanation of
to begin/finish with …
to discuss in detail
to emphasize
to note the difference
to point out
to draw a conclusion
in contrast with

Задание 2. Прочитайте и переведите на русский язык коммуникативные клише, которые используются на конференциях и для проведения презентаций.

Mr. Chairman, ladies and gentlemen, I am greatly honored to be invited to this conference.
In this paper I would like to talk about the concept of …
The object of this paper is to show …
To begin with, let us imagine that …
As many of you know …
First of all I would like to …
I am sure I don't have to remind you that …
I am very pleased to have this opportunity to …
In my paper I want to highlight …
In the introduction to my paper I would like to …
I want to begin my presentation with …
Let me begin with …
The first thing I want to talk about is …
The subject that I will discuss is …
Speech Patterns for the Body of the Paper
According to this theory…
After this, I need/ it remains only to say that …
Again, I want to emphasize that …
It should be emphasized that …
It should be pointed out that …
Let me give you my explanation of …
Let me now turn to …
Let us consider what happens if …

Let us have a closer look at …
Let us imagine that …
Let us suppose that …
Now I come to …
On the contrary …
On the one hand …, on the other hand …
Primarily …
This is indeed the case when …
This in turn implies …
This is particularly true for …
Closing Paper Speech Patterns
The last part of my talk will be devoted to …
To all this must be added that …
Before I close I would like to emphasize the importance of …
Since I am running out of time …
As my time is running out …
Finally I want to say a few words about …
I end this paper with a description of …
I leave it to you to judge …
In closing, I want to mention very briefly …
In conclusion, let me say …
In conclusion, may I repeat …
Summing up, I would like to …

Задание 3. Составьте 12 предложений на английском языке со словами и выражениями из заданий 1 и 2.

Задание 4. Прочитайте рекомендации по подготовке и проведению презентации по теме научного исследования. Обсудите эти рекомендации в группе и дополните их.

Taking part in conferences is not an easy thing. Writing a paper and preparing a presentation demands perspiration, concentration, enthusiasm and inspiration. Present day conferences are unthinkable without presentations. One should note that any presentation is a brief and bright part of your scientific research. The spotlight of the audience is always on it. Before you start making your presentation read some useful recommendations.
1. Thinking about your presentation
•   State your purpose, be specific.
•   Identify the central idea of your presentation.
•   List the main points of your presentation.
•   Think of supporting material for each main point.
•   Decide what kinds of visual aids you will use.
2. Preparing for your presentation

• Write an outline of your presentation. You might want to add transition words
• between the sections.
• Write the introduction.
• Write the conclusion.
• Print the introduction, outline, and conclusion in big print.
• Prepare your visuals.
3. Practicing your presentation
• Stand up and give your presentation (a mirror can be very helpful). Pretend that
• you have an audience and look at it.
• Do it again and time yourself. Make any adjustments necessary for time.
• Ask a friend to listen and critique it.
• Practise it several more times until you are comfortable and not reading it.
4.Giving the presentation
• Have everything ready. Don't spend time collecting possessions and getting it in order when it's time for you to speak.
• Walk to the front of the room confidently, put your notes on the lectern, and start.
• Don't apologize for anything.
• Make eye contact with your audience. Don't just look at your notes or at the wall.
• Do not read! It's really boring.
• Be enthusiastic about your topic.
• When you finish, collect your possessions quickly, thank the audience and sit down.

Задание 5. Ответьте на вопросы и обсудите планируемую презентацию по теме вашего научного исследования.

1. What is the topic of the paper you are going to present?
2. Why are you interested in this particular topic?
3. Do you always prepare for presentations?
4. What recommendations for making oral presentations do you find most helpful?
5. Which ones do you always follow?

Задание 6. Прочитайте и переведите на русский язык коммуникативные клише, которые помогут вам согласиться или не согласиться с собеседниками, выразить удивление, сомнение, сделать дополнение и пр. в процессе участия в конференции. Составьте 10 предложений, употребляя некоторые из этих клише.

Formulas of Scientific Communication
Agreeing
Yes, indeed.
I think you are entirely right.
I agree that…
That's just what I think.
Disagreeing
I am arguing against…
I would object just a little…
I object to…
I wish I could agree with you but…
Expressing surprise
It is rather surprising…
It is unbelievable…
I am puzzled by…
I wonder about…
I find it hard to believe that…
Expressing uncertainty
It seems unlikely that…
I have doubts about…
I am not at all sure about…
I am not certain…
I am doubtful whether…
I have been rather puzzled by…
I doubt it.
Making contribution
In connection with … I would like to add …
Let me add that…
In addition, I would like to mention…
I would add that…
Calling attention I want to point out that…
I would like to note…
I would like to stress the importance of…
It is worth pointing out that…
I would like to draw/ call your attention to…
Making assessment The paper raises an important question …
This method is particularly important because…
The paper demonstrates how important it is to…
These results/ data are of particular interest.
Starting a conversation As far as I know…
What I have in mind is that…
Making remarks I'd like to make a comment on …
I would like to comment on…
I have a point to make.

Provoking arguments Would you agree with…?
There seems to be some contradiction between
your points of view. Does that mean you
think…?
Asking for details/classification
Could you be more specific about…?
I am not clear about…
Could you give us some more facts to back that up, please?
Introducing opinions/attitudes
Well, I'd like to say that…
What I think is…
Delaying an answer Well, let me see…
Well, now…
That's a good question…
Oh, let me think for a moment…
It is rather difficult to answer this question …
It's difficult to give you an exact answer, but…
I'm not too sure, but…
I've no idea, I'm afraid.
Avoiding answering
I have no particular theory for this fact, but …
I'm terribly sorry, I really don't know.
Actually, I don't know …
I'd rather not answer that, if you don't mind.

Блок 3. An abstract

Задание 1. Прочитайте текст и переведите его на русский язык. Выразите свое мнение (на английском языке) относительно рекомендаций по составлению аннотации (являются ли они содержательными, полезными, полными и пр.).

An abstract is a brief description of the paper. It summarizes the basic ideas developed in the paper. The abstract, as well as the title, helps readers decide to read or to skip the paper. Therefore, it should be accurate, concise, specific, objective and self-contained. As a rule, the abstract is placed at the beginning of the paper, below the title. It is written last, when the final version of the paper is produced. Providing an abstract in English will give your work a much higher profile outside your own country and make it much more accessible to international workers in the same field. There are two types of abstracts: informational and descriptive.
Informational Abstracts, which usually follow a similar order to a scientific paper:
1. Provide communicative contents of reports.

2. Include purpose, methods, scope, results, conclusions, and recommendations.

3. Highlight essential points.

4. Are short – from a paragraph to a page or two, depending upon the length of the report (10% or less of the report).

5. Allow readers to decide whether they want to read the report.

Descriptive Abstracts, which describe the publication itself (e.g. surveys, review articles, book chapters, etc.), rather than report particular findings:

1. Tell what the report contains.

2. Include purpose, methods, scope, but not results, conclusions, and recommendations.

3. Are always very short – usually less than 100 words.

4. Introduce subject to the readers, who must then read the report to learn/study results.

Whichever type of abstract you write, follow the suggestions given below:

• Do not repeat the information given in the title.

• Do not include in the abstract any facts or ideas that are not in the text;

• eliminate unnecessary background information.

• Decide the degree of detail you include (especially for informational

• abstracts).

• Use direct, straightforward English; reduce wordy phrases; avoid jargon.

• Use the past tense when describing what was done.

• Finally, revise the opening statement to emphasize the new information

• contained in the paper.

Задание 2. Прочитайте предложения-клише, которые используют для написания аннотации. Переведите их на русский язык и выберите те, которые могут пригодиться вам для составления аннотации. Составьте собственные предложения, которые вы могли бы использовать для аннотирования.

List of phrases to write an abstract

1. A quantitative model is presented … .

2. It is shown that … effects are … .

3. The present model shows that … .

4. An upper bound of …between … and … is established for … .

5. By examining inherent structures for … it becomes clear that … .

6. … are shown to have higher/lower indices than … to exceed conventional bounds.

7. … were observed and studied under … conditions.

Задание 3. Прочитайте образцы аннотаций к научным статьям. Определите, к какому виду аннотаций они относятся

(справочные/описательные или рекомендательные). Обратите внимание на стилистические особенности и языковые нормы.

Sample 1

Max Weber, historiography, medical knowledge, and the formation of medicine Fran M. Collyer

Abstract

This paper applies Max Weber's proposition regarding the differences between the 'sciences' to the 'historicist controversy': the problems emerging from opposing approaches to understanding the past. The historiography in question is the development of the 'biomedical model' of health and disease, and the rise of 'medicine' in the course of 19th century Europe and Britain. While Weber's theoretical framework does not answer the questions posed by presentday scholars about specific historical events, it enables a critique of the process through which history is 'constructed', and offers an alternative approach to the 'transformation' of 19th century medicine.

Sample 2

Palmquist, M., & Young, R. (1992). The Notion of Giftedness and Student Expectations About Writing. Written Communication, 9(1), 137-168.

Abstract

Research reported by Daly, Miller, and their colleagues suggests that writing apprehension is related to a number of factors we do not yet fully understand. This study suggests that included among those factors should be the belief that writing ability is a gift. Giftedness, as it is referred to in the study, is roughly equivalent to the Romantic notion of original genius. Results from a survey of 247 postsecondary students enrolled in introductory writing courses at two institutions indicate that higher levels of belief in giftedness are correlated with higher levels of writing apprehension, lower self-assessments of writing ability, lower levels of confidence in achieving proficiency in certain writing activities and genres, and lower self-assessments of prior experience with writing instructors. Significant differences 72 in levels of belief in giftedness were also found among students who differed in their perceptions of the most important purpose for writing, with students who identified "to express your own feelings about something" as the most important purpose for writing having the highest mean level of belief in giftedness. Although the validity of the notion that writing ability is a special gift is not directly addressed, the results suggest that belief in giftedness may have deleterious effects on student writers.

Задание 4. Изучите информацию «Научная статья в международном журнале: требования к структуре и содержанию» в пособии Исаева, Т.Е. Иностранный язык в сфере научного общения: тексты лекций / Т.Е. Исаева; ФГБОУ ВО РГУПС. – Ростов н/Д, 2017 на стр. 45-56. Обсудите тему вашей публикации с научным руководителем и подготовьте научную статью.

Следуя рекомендациям, данным в этом уроке, напишите аннотацию к статье на английском языке.

Контрольное задание

Составьте и разыграйте диалоги в соответствии с коммуникативными ситуациями, описанными ниже. Используйте коммуникативные клише.

1. Two post-graduate students are participating in an international conference. There they get acquainted and talk about the problems of their research, discuss the progress in their field of science and its influence on life today.

2. Two post-graduate students are sharing information about new approaches and developments in their research areas. They talk about the contributions made by other scientists and discuss publications available on their research problems.

3. Two young researchers are discussing their current research, expressing particular interest in the objectives of the research, and describing the methods they use.

4. You have a poster presentation at the conference. Another participant is interested in your topic. Tell him about the main stages of your research, present the results obtained, and give a short explanation of the main findings.

5. You are interested in your colleague's research and his latest findings. Ask him/her about the difficulties he/she faced with in carrying out research (experiments, analyses), and about the progress he/she has made.

6. Your fellow-student has never participated in a conference. He is eager to know about your experiences. Tell him what the most difficult thing for you was and what you really enjoyed.

7. You submitted a paper to the organizing committee of an international conference and it was accepted. Today you are given the floor to present your research data. The time limit is ten minutes. Give your presentation.

Приложение 1

ЛЕКСИКО-ГРАММАТИЧЕСКИЙ ТЕСТ

I. Four sentences have been removed from the text. Choose from the sentences a–e the one which fits each gap (1–4). There is one extra sentence which you do not need to use.

In 1887 a new language was invented by Dr. Zamenhof, who was born in Poland. (1)_____. This new language was called Esperanto. (2)_____. Dr. Zamenhof believed that lots of people would speak the new language as a second language. (3)_____.

But the language has not been very popular or successful. (4)_____. Today only a small number of people in the world can speak it.

a. It was a mixture of a number of European languages and it had a very simple   grammar.
b. Russia is one of the countries where Esperanto is still alive.
c. He lived a great part of his life in Russia.
d. It was very easy to learn and rich enough to express thoughts and feelings.
e. There are other artificial languages invented by people.

II. Make Sentences by putting the words in order.

1. many, there, How, every, are, every day, lectures, in, time-table, your?
2. Chinese, the, Many, people, is, world's, language, think, difficult, that, most.
3. Walt, is, known, well, Disney, the, very, all, world, over.
4. neither, like, books, dull, nor, films, I, dull.
5. people, we, international, all, think, Some, should, speak, language, single, a.
6. this, What, in, there, monument, is, street?

III. Put questions to the words in bold.

1. **Her father** was a teacher of science.
2. After many years of waiting she finally **left** her native city in 1891.
3. She lived in a bare attic in **the poorest** quarter of Paris.
4. Her **meals** were poor.
5. The University of Paris **refused** him a laboratory.

IV. Complete the text with a, an, the where necessary.

There is plenty to see and do in and around Moscow, during (1)_____ day and at (2)_____ night. Visit (3)_____ Kremlin, (4)_____ most famous site in Moscow; walk round (5)_____ busy streets and buy (6)_____ traditional Russian souvenirs. Go to (7)_____ Pushkin Museum of Fine Arts or (8)_____ Tretyakov Gallery. Enjoy your stay in Moscow, it's (9)_____ great place for (10)_____ holiday.

V. Read the text below and think of the word which best fits each space
Use only one word in each space.

New Year's day (1)_____ celebrated all over the world, but not always at the (2)_____ time. Our New Year starts (3)_____ 1 January but the Chinese New Year (4)_____ place any time between 21 January and 19 February, depending (5)_____ the year.

VI. Correct the mistakes in the following sentences.
1. I'll phone you when I'll get home from school. _____
2. We'll go out when it'll stop raining. _____
3. If I know his number, I would phone him. _____
4. If you were in my position, what will you do? _____
5. I'll go to Hawaii if I will earn enough money. _____

VII. Put the verb into the correct form, active or passive
Eights Week at Oxford

Eights Week at Oxford, usually the fourth week, in May is a fine spectacle and should not (1)_____ (to miss) by anyone interested in old customs. It is the time when the main bumping races of the year (2)_____ (to hold) and the college eights (3)_____ (to compete) on the River Isis. Races (4)_____ (to run) on a league principle, with different divisions. The last race on the last day (5)_____ (to decide) which college is Head of the River. Boats (6)_____ (to space) at intervals, and the object is to catch and bump the one in front. A crew succeeding four days in succession, win their oars (the cox his rudder) – and by ancient custom throw their cox into the river.

Eights – гребные состязания между оксфордскими и кембриджскими студентами
the River is the Thames, but it is mysteriously called the Isis where it flows through Oxford

VIII. Translate the sentences by using appropriate verb tenses and modals
1. Полиция искала преступника два года, прежде чем они смогли поймать его.
2. Я думаю, что он не сможет сделать это вовремя.
3. Если у вас нет компьютера и вы не можете послать сообщение по электронной почте, вы можете написать нам.
4. Могу я поговорить с Келли? – Она не может подойти к телефону прямо сейчас. – Могу я оставить сообщение?
5. Почему ты не пришёл вчера вечером на вечеринку? – Я должен был заниматься. – Тебе следовало прийти. Мы хорошо провели время.
6. Джейн смотрит на свою контрольную работу, которую только что вернул преподаватель. Она улыбается. Должно быть, она сдала тест.
7. Кое-что я должен тебе сказать. – Давай. Я слушаю.
8. У меня проблемы с английским. – Я мог бы помочь тебе.

Railway Engineering

Text 1
Deploying unidirectional gateways

As a vital part of the national economy, the rail industry in the UK is undergoing an increase in demand for transporting passengers and freight. Unfortunately, with the rise of sophistication of cyber attacks, Britain's critical infrastructure, and its rail system in particular, is becoming more and more vulnerable. Due to interconnected systems, entertainment devices and services, and the integration of digital signalling systems, the attack surface of modern rail systems continues to grow.

Cyber attacks on rail systems are no longer a hypothetical threat. As IT/OT (information technology/operational technology) networks converge in the digital railway, cyber security is paramount.

In 2015-2016, four cyber attacks were reported on the UK railway network. In August 2015, Japan Railways Hokkaido was attacked by an allegedly Chinese-backed group. A more successful attack was conducted in December 2015 by (allegedly) North Korean hackers on a South Korean supplier of railway control equipment. Also in December 2015, a series of attacks took place (allegedly by Russian-backed groups) on a range of industrial targets in the Ukraine.

Fortunately, and despite this disturbing trend, there are ways to reduce the risks of cyber attacks. They can be diminished by following modern best practices for securing industrial control systems (ICS), with a major part of the new regulations including the deployment of unidirectional security gateways.

Text 2
Rail Cyber Security – Guidance to Industry

The British rail industry is preparing itself to take on cyber security as it embraces digital rail technology. As the threat landscape has changed for rail, all stakeholders must now have a shared responsibility of ensuring the safety and reliability of critical national infrastructure.

Particularly for rail, the industry needs strong cyber security guidance to provide consistency between organisations and interconnections.

This year, the Department for Transport (DfT) released 'Rail Cyber Security – Guidance to Industry', stating clearly that signalling networks should be protected with unidirectional gateways and there should be a clear separation between enterprise and operational networks. The DfT is also engaged in an RSSB-led development of a cyber security strategy for the rail industry.

Waterfall's Unidirectional Security Gateways are hardware-enforced protection which enable safe network integration. The unidirectional gateway allows data to flow out of a control network, such as the signalling system, into an external or corporate network, but prevents any flow of communications back.

By deploying the application replication functionality of Waterfall Unidirectional Gateways, operational personnel are able to have real-time access to operational data and monitor their control system equipment as usual. The gateway makes it physically impossible to hack the control network through this external connectivity.

Instituting these measures can enable security teams both to eliminate the possibility of online cyber attacks from these links and to divert their resources to secure secondary and residual cyber risks. Following this best practice puts rail systems in the UK in line with defined blueprints for cyber security at industrial sites around the world. Moreover, unidirectional gateway technology has been adopted by international standards and best practices guidance by many governmental and industry standards bodies worldwide.

Text 3
New silicone sealant promises improved performance

SILICONE Engineering, a supplier of silicone rubber for mass transit applications, has developed a new sponge material which is flame resistant and emits low levels of smoke.

kSil V-O is suitable for use in interior applications, including doors, lighting and HVAC seals, thermal installation in wall cavities, and vibration isolation in flooring systems. The material is designed to reduce noise and vibration, and meets European fire safety classification standard EN45545-2, and is flame resistant to UL94V-0.

The material is available in sponge sheets and rolls, and extruded profiles and sections.

Text 4
ICE predictive maintenance trial launched

GERMAN Rail (DB) and Siemens are launching a one-year pilot project to predict servicing and maintenance requirements for DB's class 407 ICE 3 trains supplied by Siemens. Data from the fleet's onboard diagnostics system will be transmitted while the trains are in service to a purpose-built data analysis centre in Munich where it will be analysed to predict component or system failures. These predictions will be used by specialists to recommend what actions need to be taken to correct the faults which will then be transmitted to DB workshop maintenance staff for either acute or planned maintenance.

All diagnostic data will be available to DB and its maintenance staff during train operation and is presented in what Siemens describes as an easily

understandable, user-friendly display. The current condition of a vehicle can thereby be monitored and appropriate action taken, which should reduce vehicle downtime due to faults.

Siemens says the data analyses made at its Mobility Data Services Centre are based on algorithms and models that can make highly reliable predictions about the future behaviour of vehicles and components.

Text 5
Sensor system turns locomotives into track inspection vehicles

THE University of Huddersfield Institute of Railway Research (IRR) is working with Siemens to develop a sensor system which could turn any rail vehicle into a track monitor to inspect the condition of rails and the track bed.

The Tracksure monitoring system is part of the Remote Condition Monitoring Competition which is supported by the Rail Safety and Standards Board (RSSB), and Network Rail.

Every train on the British main line network is fitted with a GSM-R cab radio system, and Siemens produces one of the most widely-used devices. It is now possible to fit a Tracksure sensor card to the Siemens cab radio, and by monitoring vibrations,

It is possible to detect under-track voids and provide early warning of problems created by gaps that have developed between sleepers and ballast.
.

Text 5
Frauscher launches acoustic sensing system

IRJ at InnoTrans 2016: Frauscher, Austria, unveiled its new acoustic sensing system which is able to monitor a railway along an optic fibre cable already belonging to the railway. The Frauscher Tracking Solution (FTS) has the ability to detect intruders on the railway as well as identify each wheel impact on the rail at 10m intervals. It can differentiate between trains going in opposite directions and with sensors on each track FTS can monitor train movements on multiple tracks.

FTS can detect wheel flats and broken rails, and one FTS control cabinet can monitor an 80km section of railway. The system could also be used to inform passengers of the exact arrival time of trains. Frauscher says it only takes one week to install and instrument the system.

"Some solutions for railway-specific applications have already been developed," says Mr Peter Bradley, Frauscher's FTS director. "They are now available and can be provided to the market. Due to the overwhelming feedback and results that we collected in several pilot installations and at InnoTrans 2016, we are sure that distributed acoustic sensing has the potential to become a base technology for railway operations in the near future."

Material Science/ Engineering

Text 1

Spray coating properties are determined by the deformation, solidification, and coalescence conditions of the deposited particles, which depend on the substrate properties as well as on the physical-chemical state (temperature, velocity, fusion, and oxidation) of the particles during impact with the substrate. The in-flight behavior of the particles, along with the gas dynamics, may be manipulated by adjusting the process parameters and may directly influence the film microstructure. Polymeric coatings have excellent tribological properties including low friction coefficients and high wear resistance. The recycling of post-consumer poly(ethylene terephthalate) (PET) in Brazil has significant potential and the use of thermal spraying in tribological applications is promising. Polymers may be used as dry sliding materials and many studies have been dedicated to examining their friction resistance. Polymers usually exhibit low friction coefficients, with values between 0.1 and 0.5. This work intends to contribute to the development of polymer coatings by utilizing the thermal spray of recycled PET for the improvement of the tribological behavior of carbon steel piping. Here, we describe a study of the influences of thermal spraying parameters on the tribological properties of polymeric coatings. Measurement of wear resistance, friction, and Knoop microhardness of these coatings are presented. The results were analyzed using the statistical technique design of experiments (DOE). High-wear resistance coatings were produced.

The aim of the investigation is to study the influence of parameters such as sliding distance, sliding speed, load and fly ash content on dry sliding wear loss and coefficient of friction (COF) of AlSi10MgFly ash graphite hybrid composites using Taguchi method. A pin-on-disc wear testing equipment was used to conduct the dry sliding wear tests on the hybrid composite produced through the liquid metallurgy route. Signal to noise ratio response analysis and analysis of variance were used to investigate the influence of parameters, and correlation between the parameters was established by multiple linear regression models. It was determined that sliding distance was the most dominant factor influencing the wear and COF of hybrid composites. There was a decrease in wear with increases in sliding speed and fly ash content. However, the COF of composites increased with increasing load, but decreased with increases in sliding distance, sliding speed and fly ash content. At higher sliding speeds, a mechanically mixed layer (MML), containing fractured fly ash particles and oxides of aluminium and iron form between the pin and the counterface. This MML helps to reduce the chance of direct metallic contact, thereby lowering the wear loss and COF. Multiple linear regression models were developed which could be effectively used to predict the wear loss and COF of the hybrid composites. Abrasive wear was the dominant wear mechanism at low loads and when the load was increased to 26•98 N, the wear mechanism changed to mixed abrasion delamination wear with a drastic increase in

the wear loss of the hybrid composite. Mild oxidative wear was predominant at high sliding speeds (3 m s?1) and lower loads.

Text 2

Dry or unlubricated surfaces. Three laws govern the relationship between the frictional force f and the load or weight L of the sliding object for unlubricated or dry surfaces: (a) For low pressures (normal force per unit area) the friction force is directly proportional to the normal load between the two surfaces. As the pressure increases, the friction does not rise proportionally; but when the pressure become abnormally high, the friction increases at a rapid rate until seizing takes place.(b) The value of f/L is defined as the coefficient of friction . The friction both in its total amount and its coefficient is independent of the area of contact, so long as the normal force remains the same. This is true for moderate pressures only. For high pressures, this law is modified in the same way as the first case. (c) At very low velocities, the friction force is independent of the velocity of rubbing. As the velocities increase, the friction decreases. The third law (c) implies that the force required to set a body in motion is the same as the force required to keep it in motion, but this is not true. Once a body is in motion, the force required to maintain motion is less than the force required to initiate motion and there is some dependency on velocity. These facts reveal two categories of friction: static and kinetic. Static friction is the force required to initiate motion (Fs). Kinetic or dynamic friction is the force required to maintain motion (Fk). When components slide against one another, the friction arising can wear the part through galling and overheating. Wear is the undesired removal of material from a component through tribosystems such as abrasion, adhesion, cavitation, erosion, fatigue and stress cracking, fretting, and impact. In conjunction with a corrosive environment, tribocorrosion will occur. This synergistic effect can cause very rapid loss of material, component failure, and machinery seizure. Surface technology can effectively reduce the friction coefficient, prevent wear, and improve lubrication. Abrasion can result in very rapid wear. It is classified into two primary mechanisms: In two-body abrasion, a hard, rough surface scratches, cuts, or spalls a softer surface. In three-body abrasion, a hard third body damages one or both of the sliding surfaces. This is usually due to grit or dirt getting in between the sliding interface. This wear can be minimalized by hard coatings that are strongly adhered onto the substrate and feature diffusion layers. When surfaces slide relative to one another, there is a tendency for one material to transfer onto the counterface. In its most severe form, adhesive wear results in galling and possibly machinery seizure through cold welding. Adhesion can be combated with coatings that provide dissimilar materials and harder surfaces. We offer a variety of surface solutions using coating and diffusion techniques that match specific applications. For highly loaded components such as gears, plasma nitriding is the best solution.

Text 3

When components slide against one another, the friction arising can wear the part through galling and overheating. Wear is the undesired removal of material from a component through tribosystems such as abrasion, adhesion, cavitation, erosion, fatigue and stress cracking, fretting, and impact. In conjunction with a corrosive environment, tribocorrosion will occur. This synergistic effect can cause very rapid loss of material, component failure, and machinery seizure. Surface technology can effectively reduce the friction coefficient, prevent wear, and improve lubrication. Abrasion can result in very rapid wear. It is classified into two primary mechanisms: In two-body abrasion, a hard, rough surface scratches, cuts, or spalls a softer surface. In three-body abrasion, a hard third body damages one or both of the sliding surfaces. This is usually due to grit or dirt getting in between the sliding interface. This wear can be minimalized by hard coatings that are strongly adhered onto the substrate and feature diffusion layers. When surfaces slide relative to one another, there is a tendency for one material to transfer onto the counterface. In its most severe form, adhesive wear results in galling and possibly machinery seizure through cold welding. Adhesion can be combated with coatings that provide dissimilar materials and harder surfaces. We offer a variety of surface solutions using coating and diffusion techniques that match specific applications. For highly loaded components such as gears, plasma nitriding is the best solution. Cavitation wear occurs on surfaces exposed to fluids in which entrained bubbles collapse at or near the surface. The collapse releases a jet of fluid that impacts the surface, causing a severe hammering effect. Cavitation is best combated through component redesign that either stops bubble formation or inhibits bubble collapse near the affected surfaces. Coatings can provide temporary relief prior to the redesign, or can be used in applications where redesign is not feasible. Intense cavitation is combated through tough materials that strongly work-harden, such as cobalt-based alloys. These are applied using processes that lead to metallurgical bonding, such as welding and fusing. For mild to weak cavitation, High Velocity Oxygen Fuel (HVOF) coatings and carbonitriding can be used to reduce wear. Erosion is caused by gad or liquid particles striking the surface of a component. The severity of wear strongly depends upon the velocity and hardness of the particles, as well as the angle of impact. It is crucial to consider all these conditions when designing a surface solution. For high-angle attack, select a somewhat compliant coating or a very thick coating applied by welding or thermal spray. For low-angle attack, very hard coatings are preferred.

Text 4

Covalent Bonding

In covalent bonding, stable electron configurations are assumed by the sharing of electrons between adjacent atoms. Two atoms that are covalently bonded will each contribute at least one electron to the bond, and the shared

electrons may be considered to belong to both atoms. Covalent bonding is schematically illustrated in Figure 1 for a molecule of methane.
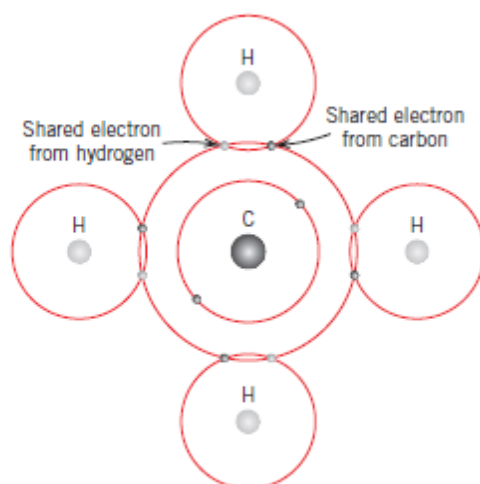

Figure 1. Schematic representation of covalent bonding in a molecule of methane (CH_4)

The carbon atom has four valence electrons, whereas each of the four hydrogen atoms has a single valence electron. Each hydrogen atom can acquire a helium electron configuration (two 1s valence electrons) when the carbon atom shares with it one electron. The carbon now has four additional shared electrons, one from each hydrogen, for a total of eight valence electrons, and the electron structure of neon. The covalent bond is directional; that is, it is between specific atoms and may exist only in the direction between one atom and another that participates in the electron sharing.

Many nonmetallic elemental molecules (H_2, Cl_2, F_2, etc.) as well as molecules containing dissimilar atoms, such as CH_4, H_2O, HNO_3 and HF, are covalently bonded. Furthermore, this type of bonding is found in elemental solids such as diamond (carbon), silicon, and germanium and other solid compounds composed of elements that are located on the right-hand side of the periodic table, such as gallium arsenide (GaAs), indium antimonide (InSb), and silicon carbide (SiC).

The number of covalent bonds that is possible for a particular atom is determined by the number of valence electrons. For N' valence electrons, an atom can covalently bond with at most 8 − N' other atoms. For example, N' = 7 for chlorine, and which means that one Cl atom can bond to only one other atom, as in Cl_2. Similarly, N' = 4 for carbon, and each carbon atom has 8 − 4 or four, electrons to share. Diamond is simply the three-dimensional interconnecting structure wherein each carbon atom covalently bonds with four other carbon atoms. Covalent bonds may be very strong, as in diamond, which is very hard and has a very high melting temperature < 3550°C (16400°F), or they may be very weak, as with bismuth, which melts at about 270°C (518°F).

Text 5
Materials of the Future

Smart (or intelligent) materials are a group of new and state-of-the-art materials now being developed that will have a significant influence on many of our technologies.

The adjective "smart" implies that these materials are able to sense changes in their environments and then respond to these changes in predetermined manners— traits that are also found in living organisms. In addition, this "smart" concept is being extended to rather sophisticated systems that consist of both smart and traditional materials. Components of a smart material (or system) include some type of sensor (that detects an input signal), and an actuator (that performs a responsive and adaptive function). Actuators may be called upon to change shape, position, natural frequency, or mechanical characteristics in response to changes in temperature, electric fields, and/or magnetic fields. Four types of materials are commonly used for actuators: shape memory alloys, piezoelectric ceramics, magnetostrictive materials, and electrorheological / magnetorheological fluids.

Shape memory alloys are metals that,after having been deformed, revert back to their original shapes when temperature is changed. Piezoelectric ceramics expand and contract in response to an applied electric field (or voltage); conversely, they also generate an electric field when their dimensions are altered. The behavior of magnetostrictive materials is analogous to that of the piezoelectrics, except that they are responsive to magnetic fields. Also, electrorheological and magnetorheological fluids are liquids that experience dramatic changes in viscosity upon the application of electric and magnetic fields, respectively. Materials/devices employed as sensors include optical fibers, piezoelectric materials (including some polymers), and microelectromechanical devices. For example, one type of smart system is used in helicopters to reduce aerodynamic cockpit noise that is created by the rotating rotor blades. Piezoelectric sensors inserted into the blades monitor blade stresses and deformations; feedback signals from these sensors are fed into a computer-controlled adaptive device, which generates noise-canceling antinoise.

Text 6
Study of Physical and Mechanical Properties of Nano-Composites of Various Compositions by Nanoindentation Method

Nanoindentation is a process of repeated immersion of the indenter with known mechanical properties in the tested material. A diamond indenter of conical shape with a cone angle of 90° and the radius of curvature 25 μm at the vertex was used during the experiment. One of the main properties of the greatest interest during nanoindentation is a micro-hardness. According to the test results the micro-hardness of the tested materials was 28-38% lower than micro-hardness of pure Phenylone C2.

The data obtained by nanoindentation helped to calculate three properties: the modulus of elasticity, the ratio of the hardness of the material to its elasticity

modulus, which is called the plasticity index of the material, and the ratio H^3/E^2, which is the qualitative comparative characteristic of the plastic deformation resistance.

The research showed there is no direct connection between H and E values, i.e., increase in the hardness of the material does not always lead to increase of its modulus of elasticity. And according to the physical meaning of H^3/E^2 value, at high hardness to increase the strain resistance is necessary to strive to the lowest possible modulus of elasticity. Thus, it can be concluded that the best composites possessing strain resistance are composites Phenylone C2 + 20% F4MB + 5% Arimid-T + 3% thermally expanded graphite, and Phenylone C2 + 20% F4MB + 5% Arimid-T + 3% spinel Mn with some reserve. They have the biggest coefficient of elastic recovery as well.

The value H/E describes the ability of a material to change its size and shape during the deformation process. It can serve as a qualitative comparative characteristic of the material resistance to the deformation under mechanical loading. It is also used to characterize the wear ability of materials at friction. According to this characteristic, all materials can be divided into three groups. The first group includes macrocrystalline materials (mainly metals and alloys). Their H/E is < 0.04. The second group includes fine-grained and nano-materials (the materials exposed to high degrees of deformation, ceramics, coatings). Their H/E is $\approx$ 0.05-0.09. The third group is represented by metals in amorphous and amorphous-crystalline states ($H/E > 0.1$).

Text 7
Scanning Probe Microscopy

In the past decade and a half, the field of microscopy has experienced a revolution with the development of a new family of scanning probe microscopes. This scanning probe microscope (SPM), of which there are several varieties, differs from the optical and electron microscopes in that neither light nor electrons is used to form an image. Rather, the microscope generates a topographical map, on an atomic scale, that is a representation of surface features and characteristics of the specimen being examined. Some of the features that differentiate the SPM from other microscopic techniques are as follows:

• Examination on the nanometer scale is possible inasmuch as magnifications as high as are possible; much better resolutions are attainable than with other microscopic techniques.

• Three-dimensional magnified images are generated that provide topographical information about features of interest.

• Some SPMs may be operated in a variety of environments (e.g., vacuum, air, liquid); thus, a particular specimen may be examined in its most suitable environment.

Scanning probe microscopes employ a tiny probe with a very sharp tip that is brought into very close proximity (i.e., to within on the order of a nanometer) of

the specimen surface. This probe is then raster-scanned across the plane of the surface. During scanning, the probe experiences deflections perpendicular to this plane, in response to electronic or other interactions between the probe and specimen surface. The in-surface-plane and out-of-plane motions of the probe are controlled by piezoelectric ceramic components that have nanometer resolutions. Furthermore, these probe movements are monitored electronically, and transferred to and stored in a computer, which then generates the three-dimensional surface image.

Specific scanning probe microscopic techniques differ from one another with regard to the type of interaction that is monitored. A scanning probe micrograph in which may be observed the atomic structure and a missing atom on the surface of silicon is shown in the chapter-opening photograph for this chapter. These new SPMs, which allow examination of the surface of materials at the atomic and molecular level, have provided a wealth of information about a host of materials, from integrated circuit chips to biological molecules. Indeed, the advent of the SPMs has helped to usher in the era of nanomaterials – materials whose properties are designed by engineering atomic and molecular structures.

Text 8
Medium-Carbon Steels

The medium-carbon steels have carbon concentrations between about 0.25 and 0.60 wt%. These alloys may be heat treated by austenitizing, quenching, and then tempering to improve their mechanical properties. They are most often utilized in the tempered condition, having microstructures of tempered martensite. The plain medium-carbon steels have low hardenabilities and can be successfully heat treated only in very thin sections and with very rapid quenching rates. Additions of chromium, nickel, and molybdenum improve the capacity of these alloys to be heat treated, giving rise to a variety of strength – ductility combinations. These heat-treated alloys are stronger than the low-carbon steels, but at a sacrifice of ductility and toughness. Applications include railway wheels and tracks, gears, crankshafts, and other machine parts and high-strength structural components calling for a combination of high strength, wear resistance, and toughness.

The compositions of several of these alloyed medium-carbon steels are presented in Table 1. Some comment is in order regarding the designation schemes that are also included.

Table 1.

AISI/SAE Designation[a]	UNS Designation	Composition Ranges (wt% of Alloying Elements in Addition to C)[b]			
		Ni	Cr	Mo	Other
10xx, Plain carbon	G10xx0				
11xx, Free machining	G11xx0				0.08–0.33S
12xx, Free machining	G12xx0				0.10–0.35S, 0.04–0.12P
13xx	G13xx0				1.60–1.90Mn
40xx	G40xx0			0.20–0.30	
41xx	G41xx0		0.80–1.10	0.15–0.25	
43xx	G43xx0	1.65–2.00	0.40–0.90	0.20–0.30	
46xx	G46xx0	0.70–2.00		0.15–0.30	
48xx	G48xx0	3.25–3.75		0.20–0.30	
51xx	G51xx0		0.70–1.10		
61xx	G61xx0		0.50–1.10		0.10–0.15V
86xx	G86xx0	0.40–0.70	0.40–0.60	0.15–0.25	
92xx	G92xx0				1.80–2.20Si

[a] The carbon concentration, in weight percent times 100, is inserted in the place of "xx" for each specific steel.

[b] Except for 13xx alloys, manganese concentration is less than 1.00 wt%.
Except for 12xx alloys, phosphorus concentration is less than 0.35 wt%.
Except for 11xx and 12xx alloys, sulfur concentration is less than 0.04 wt%.
Except for 92xx alloys, silicon concentration varies between 0.15 and 0.35 wt%.

The Society of Automotive Engineers (SAE), the American Iron and Steel Institute (AISI), and the American Society for Testing and Materials (ASTM) are responsible for the classification and specification of steels as well as other alloys. The AISI/SAE designation for these steels is a four-digit number: the first two digits indicate the alloy content; the last two give the carbon concentration. For plain carbon steels, the first two digits are 1 and 0; alloy steels are designated by other initial two-digit combinations (e.g., 13, 41, 43). The third and fourth digits represent the weight percent carbon multiplied by 100. For example, a 1060 steel is a plain carbon steel containing 0.60 wt% C. A unified numbering system (UNS) is used for uniformly indexing both ferrous and nonferrous alloys. Each UNS number consists of a single-letter prefix followed by a five-digit number. The letter is indicative of the family of metals to which an alloy belongs. The UNS designation for these alloys begins with a G, followed by the AISI/SAE number; the fifth digit is a zero.

Construction Engineering

Text 1
Moscow – Kazan HSRL

Summary of the Project and Tender Decision to build the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line (hereinafter, Moscow – Kazan HSRL) as the first step of the highspeed rail system in the Russian Federation was made on May 2013 at a meeting chaired by the President of the Russian Federation and discussing the development of high-speed rail. The Moscow – Kazan HSRL section will go through seven regions of the Russian Federation, with the travel time from Moscow to Kazan being less than 3 hours and 30 minutes, and the maximum speed of up to 400 km/h.

High-Speed Rail Lines Joint Stock Company (JSC), a subsidiary of Russian Railways JSC, acts as the customer of the entire scope of the Moscow –Kazan HSRL pilot line and may contract other companies on a competitive tender basis.In order to implement the Moscow – Kazan HSRL project, High-Speed Rail Lines JSC is planning to announce an open tender in the nearest future to select a contractor for engineering surveys for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line, and for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line (hereinafter, the Tender). The open Tender will be organized by the Competitive Procurement Center, a subdivision of Russian Railways JSC. The Tender will be open and consist of one stage, and will be held in accordance with the requirements of the Federal Law No. 223 dated 18 July 2011 on "Procurement of Tender Open tender for selection of a contractor for engineering surveys for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line, and for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg highspeed rail line Moscow – Kazan HSRL Moscow – Kazan High-Speed Rail Line

Text 2
Goals and Targets of the Construction Project Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg highspeed rail line

Contract for engineering surveys for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line, and for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg highspeed rail line Goods, Work and Services by Specific Types of Legal Entities and pursuant to the procedure for procurement of goods and services

for primary types of operation of High-Speed Rail Lines JSC, which is published on the official web site at www.zakupki.gov.ru. Based on the Tender results, High-Speed Rail Lines JSC and the winner will conclude a contract for engineering surveys for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line, and for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg high-speed rail line (hereinafter, the Contract). Key information about the Moscow – Kazan section of the Moscow –

Kazan – Yekaterinburg high-speed rail line (hereinafter, the Project) HSRL location Moscow, Moscow Region, Vladimir Region, Nizhny Novgorod Region, Chuvash Republic, Mari El Republic, Republic of Tatarstan Length 770 km

Travel time from Moscow to Kazan 3 h 30 min Maximum speed Up to 400 km/h Track Gauge 1,520 mm Scope of contract Engineering surveys for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg HSRL, and for development of design documentation for construction of the Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg highspeed rail line. Estimated completion date - 24 December 2014.

The first step in building high-speed rail system in the Russian Federation will be construction of the Moscow – Kazan HSRL section that will go through seven regions of the Russian Federation: Moscow and Moscow Region, Vladimir Region, Nizhny Novgorod Region, Chuvash Republic, Mari El Republic, and the Republic of Tatarstan. The further development of the line provides for its extension to Yekaterinburg.

The launch of this section will reduce the travel time between Moscow and Kazan by four times – from 14 hours (time of travel using the existing railway infrastructure) to 3.5 hours, and it will reduce travel time from Nizhny Novgorod to Kazan by seven times – 10 hours 32 minutes vs. 1 hour 30 minutes. The Moscow – Kazan HSRL will improve interconnection of Russian regions as well as the population mobility, and the average travel time between capitals of these regions will be one hour

Text 3
Construction Project Moscow – Kazan section of the Moscow – Kazan – Yekaterinburg highspeed rail line

The first step in building high-speed rail system in the Russian Federation will be construction of the Moscow – Kazan HSRL section that will go through seven regions of the Russian Federation: Moscow and Moscow Region, Vladimir Region, Nizhny Novgorod Region, Chuvash Republic, Mari El Republic, and the Republic of Tatarstan. The further development of the line provides for its extention to Yekaterinburg.

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The Moscow – Kazan HSRL Project is a new, advanced project using modern materials and technologies and creating prerequisites for the development of high-tech industries with high added value. The high-speed rail system will benefit the social and economic areas of the country (macroeconomic effect by creating a stimulus for economic growth in the affected regions of the Russian Federation, improving overall economic rating for investments, etc). The social and economic impact of the Project can be assessed only indirectly, through the increase of the gross value added.

According to its scale, span, social and economic effect, the Moscow – Kazan HSRL Construction Project belongs to the category of projects of national importance. The Project is part of the Russian Transport Strategy 2030. Construction of the Moscow – Kazan HSRL will help solve important social and economic tasks: increase people mobility and business activity by reducing travel time between cities within the rail line attraction zone; improve transportation links between the regions and enable economic growth of territories; create new jobs: 80,000 jobs during the construction phase (of which 45,000 – in the related fields) and 30,000 jobs during the operation phase (of which 15,000 – in the related fields), including 5,600 jobs in transportation; create a flow of orders for Russian business: total price of construction procurement orders will be more than 270 billion roubles.

Text 4
Design Factors for the Moscow – Kazan HSRL section

Artificial structures on the Moscow – Kazan high speed rail line will be designed for permanent and temporary water courses, at crossings of different levels with existing automobile roads and rail roads as well as for passage of pedestrians, farm machinery and livestock, and on migration routes of wild animals. Artificial structure design solutions shall be developed in accordance with the Special Specifications for Design, Construction and Operation of High-Speed Rail Lines and guidelines of SP35.13330.2011 Bridges & Pipes.

Key requirements for designing of HSRL artificial structures: vertical elastic deflection of superstructures vs. the rated burden of high-speed train may not exceed 1/2200 L (where L is the effective span, m);

- horizontal elastic deflection of superstructures vs. the rated burden of high-speed train may not exceed 1/5000 L (where L is the effective span, m);

- maximum static axle load of a special (service) train is 23 tons (230 kN) at a maximum speed of 90 km/h. Class C-11 load according to SP 35.13330.2011 Bridges & Pipes (updated version of SNIP 2.05.03-84*);

- size of T train according to GOST 9238: height – 5,300 mm, half-width – 1,875 mm ;

- C400 obstruction clearance: height – 8,200 mm, half-width – 2,450 mm (for bridge superstructures with a roadway below, tunnels, etc.);

- distance between axes of the main track on bridges, overpasses and viaducts matches the intertrack space at approaches;

- distance from the structure bottom to the roadway of public road overpasses – 5.50 m;

- height of pedestrian bridges with overhead bracings is 3.0 m;

- height of pedestrian tunnels – 2.5 m;

- distance from the bottom of bridge structures and viaducts to the ground on animal migration routes – not less than 3.50 m;

- bridge underclearances for passageof field roads and cattle driving: height – not less than 4.50 m, width – not less than 10.0 m;

- bridge underclearances over navigable rivers – in accordancewith GOST 26775-97;

- width of the ballast section for HSR maintenance using track repair machines – 8.7 m;

- thickness of the ballast under a tie – 45 cm;

- artificial structures intended for passage of pedestrians should meet the needs of people with limited mobility and people with disabilities (lifts, ramps, etc.)

Text 5
Design Factors for the Moscow – Kazan HSRL section

The design of bridges, overpasses and viaducts includes double-track superstructures, which provides good vibration performance and meets high demands for vertical, horizontal and torsional rigidity. Based on best practices, results of test calculations and cost-and technical comparison of options, the superstructure design solutions, ranging from 16.5 m to 150.0 m, were developed for this stage.

Multi-span beam systems are designed for HSRL large bridges and viaducts. Uncut multi-span beam systems will be applied to reduce stress in continuous welded rail tracks in case of high piers or bad ground conditions. Based on the analysis of various superstructure designs, test calculations, cost-and-technical comparison of options, and taking into account best practices for superstructures in the range from 16.5 to 55.0 m, the decision was made to use double-track reinforced concrete structures. The decision is underlain by greater vertical, horizontal and torsional rigidity, as well as good vibration characteristics and low cost. 16.5 to 30 m long superstructures should be prefabricated monolithic, while

the 30 to 55 m superstructures should be monolithic. Metal superstructures are designed for spans from 66.0 to 150.0 m. Large spanning is required in case of an oblique intersection of the main railways and motor roads, as well as navigable rivers. In some cases, it is considered appropriate to use metal spans 33.0-55.0 m in length, with low overhead clearance. Design of piers should be based on cast in-situ reinforced concrete. The main type of pier foundation is a pile grid resting on bored piles with a diameter of 1.5 m. It is possible to use bored piles with a diameter of 0.8 to 1.7 m and driven prism piles. In the areas with periodic water streams with the height of the embankment from 2.5 to 6.0 m and estimated low flow of up to 2.8 m³/s, culverts should be used with a diameter of 1.5 m, made of corrugated metal spiral structures (15sp Grade according to GOST 1577 – 93, 250, 02, GOST R52246, S250GD per standard EN 10326:2006, DX51D standard EN 10327:2006), with thickness of up to 3.5 mm, which are approved by the Tracks & Structures Department Information Memorandum of the Central Infrastructure Directorate of Russian Railways JSC, No. 2644/TsDI dated 02/20/2012). Waterproofing of these culverts is done by applying a TC2 two-side coating (HDPE coating with the thickness of 250 microns on each side).

Rail Rolling Stock

List of Abbreviations

BT Bombardier Transportation
CAF Construcciones y Auxiliar de Ferrocarriles
CI Coupling Index
CNR China CNR Corporation Limited
COO Chief Operative Officer
CoPS Complex Products and Systems
CPI Change Propagation Index
 CSR China South Locomotive & Rolling Stock Corporation Limited
CTO Chief Technology Office
DB Deutsche Bahn
DSM Design Structure Matrix
EBIT Earning Before Interest and Tax
ERTMS European Rail Traffic Management System
EU European Union
GSC Global Supply Chain
GVI Generational Variety Index
HLA Hierarchic Layer Analysis
HVAC Heating Ventilation and Air Conditioning
JDDP Joint Design and Development Process
MFD Modular Function Deployment
MSG Market Segmentation Grid
QFD Quality Function Deployment
RBT Resource-Based Theory R&D Research & Development
SNCF Société Nationale des Chemins de fer Français
TCMS Train Control Monitoring System
TCUA Team Centre Unified Architecture

Text 1
Combining theory and practice in a platform planning and design methodology for rolling stock

As one of the biggest global rolling stock manufacturers, Bombardier Transportation owns a broad project portfolio with different customers all over the world. In recent years, however, the summed complexity of the projects made the company face huge time delays and cost overrun in the development and delivery of products. A cumulated delay of several months and the increasing engineering hours overspend in the development of main projects made BT brings its customer-oriented product development into question. Hence, to keep a competitive advantage in the worldwide rolling stock market, the company decided to migrate towards a platform-based product development. Multinational engineering-based

companies such as BT seek constantly to optimize and integrate their value chain on a worldwide basis by promoting the reuse of shared products, processes and methods. However, due to the many mergers and acquisitions and to the large amount of product development projects their product portfolio is often very heterogeneous and therefore needs to be consolidated and harmonized. The prevailing strategy to achieve product portfolio harmonization and reuse is the development of product platforms and product families aimed at exploiting product commonality. This consists of reusing standardized components across a large range of products in order to provide product variety while managing complexity and keeping cost low. In some cases, platforms and product families have been already developed at BT within and outside customer-projects, however concepts, processes, methods and capabilities were often differently understood and applied. Although platform development is not new to the company, explicit structures and processes are not yet in place. In the prior projects, the platform-based product development was often pushed by multiple requests of the same customer or realized "by accident" without a proper platform strategy and planning activity. Experience made during these developments highlighted the lack of guidance available in developing platforms. Notwithstanding the development of previous platforms, BT still lacks consensus on a clear definition of the platform management concepts and the relative planning and design characteristics. This is the main challenge faced by the company: A common approach for planning and designing platforms is missing because of the difficulty to deal with different market requirements, standards and regulations, market prices and education of the work force.

Text 2
Research goal, central question and research framework: how to plan and design rolling stock platforms

According to Gunzenhauser[1] , the most existing research including Meyer and Lehnerd [2] , Robertson and Ulrich[3] , Moreno Muffato[4] , Simpson et al.[5] is not targeted at the operational management level of product executor and mainly addresses the problem from the perspective of consumer goods or the automotive industry. Prior literature does investigate some of the issues described above but usually these are covered in isolation and not in a systematic manner. Hence, the literature that applies platform concepts and development methods to capital-intensive products and complex systems is still scarce and fragmented. Gunzenhauser's work on "Platform concepts for the systems business"[6] represents a rare exception of platform-based literature targeted at complex products and capital-intensive goods. However, the holistic method introduced by Gunzenhauser results sometimes too complex or not extensive enough for platform planning and design of rolling stock. To meet the interests of both research and BT, this thesis aims at identifying platform planning and design characteristics of rolling stock and at developing a systematic planning and design methodology for rolling stock

platforms. Therefore the main research question is: RQ: How rail rolling stock providers can develop modular platforms following a systematic planning and design methodology? The main research question can be divided into four sub-questions, which help to structure the research work:

SQ1: What is the background information needed to plan and develop rail rolling stock platforms?

3 SQ2: What are the platform planning and design methods available in the literature?

SQ3: What are the planning and design methods available at BT?

SQ4: How can be both platform planning and design methods available in the literature and planning and design methods available at BT integrated and combined in a systematic approach? To address the exploratory questions, a research framework that is based on both theory-based business problem-solving and case study is deployed. The research design is grounded on a case study research.7 The research framework follows the six-step methodology developed by van Aken and colleagues, and its description helps understanding the structure of this thesis.

Text 3
Research steps

With the support of the literature, in the second chapter a preliminary theoretical methodology for platform planning and design for CoPS is conceived (step 1. The literature describes the concepts of platform development and modularity, focusing on the research field of CoPS In fact, it is important to point out that the platform planning and design characteristics and the correspondent methods are still kept general in this phase of the study. That means that are not tailored neither to the case of rolling stock nor the case of BT. Since platform planning and design characteristics can be analysed exclusively within platform-based projects, the research is designed as a comparative case study that allows the author to identify similarities and differences across platform-based product developments (step 2). The exploratory nature of the study led the author to opt for qualitative empirical evidence to facilitate an in-depth analysis of the phenomenon. Thus, data collection is based on semi-structured interviews, corporate documents and author's observations. In the third chapter a description of the business context in which BT operates is provided, focusing on BT's need for a platform-based product development. While the fourth chapter presents the research methodology in details, the fifth chapter provides the empirical evidence of this research by distinguishing between within-case and cross-case analysis. At this phase, the platform planning characteristics identified in the case study and their translation into methodological tasks form step 3 of the research plan. Based on platform planning and design characteristics for rolling stock an intermediate methodological process is developed in step 4. The methodology is then analysed and validated by expert engineers through its practical application (step 5). Finally

from the presentation of the planning and design methodology recommendations are derived on how BT can easily adopt the planning and design methodology to develop rolling stock platforms (step 6). 5 2. Platform planning and design in CoPS form the theoretical foundations.

Text 4
Platform development in organisations – key concepts and process considerations

The term "product platform" or simply "platform" has already entered the lexicon of most R&D engineers and product managers within different business and industries. The broad use and application of the concept in different business environments generated a variety of definitions and different understandings. Fairly universal, platform thinking is the process of identifying and exploiting commonalities among product offering and target markets to create and deliver new offerings. Platform thinking enables companies to organise and develop a product platform defined by Meyer and Lehnerd as "a set of subsystems and interfaces that form a common structure from which a stream of derivative products can be efficiently developed and produced". Similarly, Muffatto defines a platform as "a relatively large set of product components that are physically connected as a stable subassembly and are common to different final models". In accordance to this understanding, the scope of a product platform is to achieve a certain degree of commonality across different products deriving from a platform solution. The purpose of commonality strategies in product development consists of the reuse and sharing of assets such as components, technologies, interfaces, and/or infrastructures, across product families and derivative products. So far different terms such as product platform, product families and derivative products have been introduced to define a product platform. It is important to clarify that these terms are hierarchically different and cannot be used deliberatively as synonyms. Although the previous definitions provide a clear idea of what a product platform is, they exclusively focus on physical elements without including nonphysical assets. By contrast, alternative streams of research comprise also nonphysical assets. For instance, Ulrich and Eppinger define a product platform as "a set of assets shared across a set of products" by dividing platforms into the following four categories of assets: Components: physical parts of the product platform. Processes: equipment and methodologies used to design and manufacture components. Knowledge: design, know-how and technology applications. People and relationships: cross-functional platform development teams, supplier networks, networks of expertise.

Text 5

The combination of both physical and nonphysical assets "creates a continuum on which physical elements, such as components and systems, provide one pole and the structure, including architectures and interfaces, another". This definition helps to understand the difference between a mere standardisation and a platform solution. Although both use commonality strategies, the standardisation of physical elements across a set of products leads only to the sharing of a modest set of components, whereas a platform solution implies the sharing of a significant portion of development and production assets as well as physical and nonphysical parts. The terminology used to introduce and define product platform revolves around three basic terms: platform, product families and derivative products. In the literature these terms are often interchanged and used in a conflicting manner to express dissimilar concepts. It is important to shed light on that and clarify that these terms are hierarchically different and cannot be used deliberatively as synonyms. "A product family is the collection of products that share the same assets", whereas a derivative product is a product that belongs to a product family. "A platform is therefore neither the same as a derivative product nor is the same as a product family; it is the common basis of all individual products within a product family".

According to the previous definitions, a platform is always linked to a product family and can serve multiple product lines in the market. The leading principle behind the platform concept is to balance commonality (technical needs) and differentiation needs (market needs) within a product family. A basic requirement is therefore the decoupling of elements to achieve the separation of common elements from differentiating elements. Hence, a platform is only the first outcome of new product development based on platforms and product families. Simpson and colleagues propose a general framework for product development based on platform and product family . The process includes three main phases: 1) Product platform development 2) Product family development 3) Derivative product development.

Mechatronics and Robotics

Text 1`

Mobile Robots

Since the foundation of the Mobile Robot Lab by the author at The University of Western Australia in 1998, we have developed a number of mobile robots, including wheeled, tracked, legged, flying, and underwater robots. We call these robots the "EyeBot family" of mobile robots, because they are all using the same embedded controller "EyeCon" (EyeBot controller, see the following section). The simplest case of mobile robots are wheeled robots. Wheeled robots comprise one or more driven wheels and have optional passive or caster wheels (drawn hollow) and possibly steered wheels. Most designs require two motors for driving (and steering) a mobile robot. The design on the left-hand side of Figure 1.2 has a single driven wheel that is also steered. It requires two motors, one for driving the wheel and one for turning. The advantage of this design is that the driving and turning actions have been completely separated by using two different motors. Therefore, the control software for driving curves will be very simple. A disadvantage of this design is that the robot cannot turn on the spot, since the driven wheel is not located at its center. The robot design in the middle of Figure 1.2 is called "differential drive" and is one of the most commonly used mobile robot designs. The combination of two driven wheels allows the robot to be driven straight, in a curve, or to turn on the spot. The translation between driving commands, for example a curve of a given radius, and the corresponding wheel speeds has to be done using software. Another advantage of this design is that motors and wheels are in fixed positions and do not need to be turned as in the previous design. This simplifies the robot mechanics design considerably. Finally, on the right-hand side of Figure 1.2 is the so-called "Ackermann Steering", which is the standard drive and steering system of a rear-driven passenger car. We have one motor for driving both rear wheels via a differential box and one motor for combined steering of both front wheels. It is interesting to note that all of these different mobile robot designs require two motors in total for driving and steering. A special case of a wheeled robot is the omni-directional "Mecanum drive" robot in Figure 1.3, left. One disadvantage of all wheeled robots is that they require a street or some sort of flat surface for driving. Tracked robots (see Figure 1.3, middle) are more flexible and can navigate over rough terrain. However, they cannot navigate as accurately as a wheeled robot. Tracked robots also need two motors, one for each track.

Text 2

Robots and Controllers

Legged robots are the final category of land-based mobile robots. Like tracked robots, they can navigate over rough terrain or climb up and down stairs, for example. There are many different designs for legged robots, depending on their number of legs. The general rule is: the more legs, the easier to balance. For example, the six-legged robot shown in the figure can be operated in such a way that three legs are always on the ground while three legs are in the air. The robot will be stable at all times, resting on a tripod formed from the three legs currently on the ground – provided its center of mass falls in the triangle described by these three legs. The less legs a robot has, the more complex it gets to balance and walk, for example a robot with only four legs needs to be carefully controlled, in order not to fall over. A biped (two-legged) robot cannot play the same trick with a supporting triangle, since that requires at least three legs. So other techniques for balancing need to be employed, as is discussed in greater detail in Chapter 11. Legged robots usually require two or more motors ("degrees of freedom") per leg, so a sixlegged robot requires at least 12 motors. Many biped robot designs have five or more motors per leg, which results in a rather large total number of degrees of freedom and also in considerable weight and cost. A very interesting conceptual abstraction of actuators, sensors, and robot control is the vehicles described by Braitenberg. In one example, we have a simple interaction between motors and light sensors. If a light sensor is activated by a light source, it will proportionally increase the speed of the motor it is linked to. In Figure 1.4 our robot has two light sensors, one on the front left, one on the front right. The left light sensor is linked to the left motor, the right sensor to the right motor. If a light source appears in front of the robot, it will start driving toward it, because both sensors will activate both motors. However, what happens if the robot gets closer to the light source and goes slightly off course? In this case, one of the sensors will be closer to the light source, and therefore one of the motors will become faster than the other. This will result in a curve trajectory of our robot and it will miss the light source.

The EyeCon is a small, light, and fully self-contained embedded controller. It combines a 32bit CPU with a number of standard interfaces and drivers for DC motors, servos, several types of sensors, plus of course a digital color camera. Unlike most other controllers, the EyeCon comes with a complete built-in user interface: it comprises a large graphics display for displaying text messages and graphics, as well as four user input buttons. Also, a microphone and a speaker are included. One of the biggest achievements in designing hardware and software for the EyeCon embedded controller was interfacing to a digital camera to allow onboard real-time image processing. We started with grayscale and color Connectix "QuickCam" camera modules for which interface specifications were available. However, this was no longer the case for successor models and it is virtually impossible to interface a camera if the manufacturer does not disclose the protocol. This lead us to develop our own camera module "EyeCam" using low resolution CMOS sensor chips. The current design includes a FIFO hardware buffer to increase the throughput of image data. A number of simpler robots use only 8bit controllers. However, the major advantage of using a 32bit controller

versus an 8bit controller is not just its higher CPU frequency (about 25 times faster) and wider word format (4 times), but the ability to use standard off-the-shelf C and C++ compilers. Compilation makes program execution about 10 times faster than interpretation, so in total this results in a system that is 1,000 times faster. We are using the GNU C/C++ cross-compiler for compiling both the operating system and user application programs under Linux or Windows. This compiler is the industry standard and highly reliable. It is not comparable with any of the C-subset interpreters available. The EyeCon embedded controller runs our own "RoBIOS" (Robot Basic Input Output System) operating system that resides in the controller's flashROM. This allows a very simple upgrade of a controller by simply downloading a new system file. It only requires a few seconds and no extra equipment, since both the Motorola background debugger circuitry and the writeable flash-ROM are already integrated into the controller. RoBIOS combines a small monitor program for loading, storing, and executing programs with a library of user functions that control the operation of all on-board and off-board devices. The library functions include displaying text/graphics on the LCD, reading push-button status, reading sensor data, reading digital images, reading robot position data, driving motors, v-omega (vω) driving interface, etc. Included also is a thread-based multitasking system with semaphores for synchronization. The RoBIOS operating system is discussed in more detail in Chapter B. Another important part of the EyeCon's operating system is the HDT (Hardware Description Table). This is a system table that can be loaded to flash-ROM independent of the RoBIOS version. So it is possible to change the system configuration by changing HDT entries, without touching the RoBIOS operating system. RoBIOS can display the current HDT and allows selection and testing of each system component listed (for example an infrared sensor or a DC motor) by component-specific testing routines. The commercial producer of the EyeCon controller, shows hardware schematics. Framed by the address and data buses on the top and the chip-select lines on the bottom are the main system components ROM, RAM, and latches for digital I/O. The LCD module is memory mapped, and therefore looks like a special RAM chip in the schematics. Optional parts like the RAM extension are shaded in this diagram. The digital camera can be interfaced through the parallel port or the optional FIFO buffer. While the Motorola M68332 CPU on the left already provides one serial port, we are using an ST16C552 to add a parallel port and two further serial ports to the EyeCon system. Serial-1 is converted to V24 level (range +12V to −12V) with the help of a MAX232 chip. This allows us to link this serial port directly to any other device, such as a PC, Macintosh, or workstation for program download. The other two serial ports, Serial-2 and Serial-3, stay at TTL level (+5V) for linking other TTL-level communication hardware, such as the wireless module for Serial-2 and the IRDA wireless infrared module for Serial-3. A number of CPU ports are hardwired to EyeCon system components; all others can be freely assigned to sensors or actuators. By using the HDT, these assignments can be defined in a structured way and are transparent to the user program. The on-board motor controllers and

feedback encoders utilize the lower TPU channels plus some pins from the CPU port E, while the speaker uses the highest TPU channel. Twelve TPU channels are provided with matching connectors for servos, i.e. model car/plane motors with pulse width modulation (PWM) control, so they can simply be plugged in and immediately operated. The input keys are linked to CPU port F, while infrared distance sensors (PSDs, position sensitive devices) can be linked to either port E or some of the digital inputs. An eight-line analog to digital (A/D) converter is directly linked to the CPU. One of its channels is used for the microphone, and one is used for the battery status. The remaining six channels are free and can be used for connecting analog sensors.

Text 3
Autonomous Automobiles

The history of autonomous automobiles is still very young and has been initiated and shaped by Ernst Dickmanns from University BW, München, Germany. When he first introduced his ideas on vision-guided autonomous vehiclecontrol at regional conferences, research colleagues questioned the viability of his approach and even the overall feasibility of such a project. Dickmanns proved them wrong by developing several autonomous car prototypes (VaMoRs, VaMP) and demonstrating the reliability of his autonomous driving systems on public highways in the presence of other traffic (see Fig. 26.1). His autonomous car trip from Bavaria to Denmark in 1995 over 1,758km with only minimal intervention was a milestone for autonomous vehicles. Dickmanns' hardware and software designs have been copied for research projects in industry (e.g. Daimler-Benz), as well as in academia (e.g. TU München). By comparison, this makes the DARPA Grand Challenge in 2004 and 2005 look like a walk in the park. For the 2005 Grand Challenge , vehicles had to navigate an empty road over 132 miles in the Nevada desert, while the exact driving path was specified by several thousand GPS way points. Teams were allowed to manually adjust and edit the given way points before the race start (e.g., with help of satellite-based maps). Once the autonomous vehicle was on its way, no further interference was allowed. While none of the competitors was able to finish the race in 2004, five autonomous cars finished the race in 2005. The most prominent sensors used for the Grand Challenge are a differential GPS receiver for navigation and a combination of several laser and radar sensors for fine-tuned road detection and collision avoidance. While several participating teams did use a vision-subsystem to increase their road look-ahead in order to be able to drive at higher speeds, solving the Grand Challenge does not necessarily require any image processing, since the navigation path is given and each vehicle has the road to itself. Although DARPA's initiative undoubtedly created a new momentum for research in autonomous automobiles, DARPA has also been criticized for restricting participation to U.S. entries and for providing million dollar start-up funding for previously successful teams. Most entries in the Grand Challenge and its 2007

successor competition Urban Challenge are funded well in excess of one or two million U.S. dollars, not counting staff and student labor or generous donations and support from automotive industry partners. Of course, this makes it impossible for international universities or smaller research groups to participate. This is why the University of Manitoba, Winnipeg, Canada, and The University of Western Australia, Perth, Australia, have introduced the "not so Grand Challenge" as a student competition. Similar GPS-based navigation tasks are to be solved with small robot vehicles over a much smaller track on the university campus. The automotive industry has been very reluctant to release products related to autonomous driving systems, although several research systems are marketready. This is mainly due to liability issues and the fear of law suits following accidents with autonomous driving systems. Who would be liable in the caseof an accident with an autonomous driving system? Since it cannot be the (non-) driver, as he or she is not in control of the vehicle, liability would default to the manufacturer. As a consequence, the automotive industry has concentrated on developing driver-assistance systems. These systems perform exactly the same tasks as an autonomous driving system, but they do not have a direct link for interfering with the automobile's controls. Instead, a driver-assistance system monitors the environment through its sensors (e.g., radar, vision) and warns the driver in potentially dangerous situations. One example for such a driver-assistance system is the lane-departure warner by Daimler-Benz, which can be ordered as an option for Actros class trucks. This system comprises an embedded vision system using a monocular camera that performs a real-time lane detection by identifying lane markings in the camera image. If the system detects that the truck slowly drifts out of its lane without the driver operating the turn signal, an acoustic warning signal is played over the truck's stereo speakers, mimicking an audible lane marking to the left or right. Since most truck accidents are due to driver fatigue, the warning system will hopefully wake up the driver in time to correct the truck's path. Other current driver-assistance systems do interfere with the automotive's driving. We have now seen ABS and ESP for a number of years, and the "intelligent cruise control" since 2001. The intelligent cruise control lets the driver not only set a desired speed, but also a desired minimum distance to the car in front. Whenever the actual distance to the car in front goes below this minimum distance, the car is automatically slowed down. All of today's intelligent cruise control systems are based on radar sensors, which are considered more reliable than vision systems under all weather conditions. However, it is expected that vision-based driver-assistance systems will be introduced in the near future. Other driver-assistance systems with driving interference about to be released are automatic stop-and-go driving in a traffic jam, emergency braking assistants, and lane-keeping assistants.

Text 4

Behavior Framework

The objective of a behavior framework is to simplify the design and implementation of behavior-based programs for a robot platform such as the EyeBot. At its foundation is a programming interface for consistently specified behaviors. We adapt the convention of referring to simple behaviors as schemas and extend the term to encompass any processing element of a control system. The specification of these schemas is made at an abstract level so that they may be generically manipulated by higher-level logic and/or other schemas without specific knowledge of implementation details. Schemas may be recursively combined either by programming or by generation from a user interface. Aggregating different schemas together enables more sophisticated behaviors to be produced. The mechanism of arbitration between grouped schemas is up to the system designer. When combined with coordination schemas to select between available behaviors, the outputs of the contributing modules can be directed to actuator schemas to produce actual robot actions. A commonly used technique is to use a weighted sum of all schemas that drive an actuator as the final control signal. The framework architecture was inspired by AuRA's reactive component, and takes implementation cues from the TeamBots environment realization. The basic unit of the framework is a schema, which may be perceptual (for example a sensor reading) or behavioral (for example move to a location). A schema is defined as a unit that produces an output of a pre-defined type. Inour implementation, the simplest types emitted by schemas are integer, floating point, and boolean scalar values. More complex types that have been implemented are the two-dimensional floating point vector and image types. The floating point vector may be used to encode any two-dimensional quantity commonly used by robot schemas, such as velocities and positions. The image type corresponds to the image structure used by the RoBIOS image processing routines. Schemas may optionally embed other schemas for use as inputs. Data of the pre-defined primitive types is exchanged between schemas. In this way behaviors may be recursively combined to produce more complex behaviors. In a robot control program, schema organization is represented by a processing tree. Sensors form the leaf nodes, implemented as embedded schemas. The complexity of the behaviors that embed sensors varies, from simple movement in a fixed direction to ball detection using an image processing algorithm. The output of the tree's root node is used every processing cycle to determine the robot's next action. Usually the root node corresponds to an actuator output value. In this case output from the root node directly produces robot action. The behavioral framework has been implemented in C++, using the RoBIOS API to interface with the Eyebot. These same functions are simulated and available in EyeSim, enabling programs created with the framework to be used on both the real and simulated platforms. The framework has been implemented with an object-oriented methodology. There is a parent Node class that is directly inherited by type-emitting schema classes for each pre-defined type. For example, the NodeInt class represents a node that emits an integer output. Every schema inherits from a node child class, and is thus a type of node itself. All schema classes define a value(t) function that returns a primitive type value at a given time

t. The return type of this function is dependent on the class – for example, schemas deriving from NodeInt return an integer type. Embedding of schemas is by a recursive calling structure through the schema tree. Each schema class that can embed nodes keeps an array of pointers to the embedded instances. When a schema requires an embedded node value, it iterates through the array and calls each embedded schema's respective value(t) function. This organization allows invalid connections between schemas to be detected at compile time: when a schema embedding a node of an invalid type tries to call the value function, the returned value will not be of the required type. The compiler checks that the types from connected emitting and embedding nodes are the same at compilation time and will flag any mismatch to the programmer. The hierarchy of schema connections forms a tree, with actuators and sensors mediated by various schemas and schema aggregations. Time has been discretized into units, Schemas in the tree are evaluated from the lowest level (sensors) to the highest from a master clock value generated by the running program.

Text 5

Sensors

There are a vast number of different sensors being used in robotics, applying different measurement techniques, and using different interfaces to a controller. This, unfortunately, makes sensors a difficult subject to cover. We will, however, select a number of typical sensor systems and discuss their details in hardware and software. The scope of this chapter is more on interfacing sensors to controllers than on understanding the internal construction of sensors themselves. What is important is to find the right sensor for a particular application.

This involves the right measurement technique, the right size and weight, the right operating temperature range and power consumption, and of course the right price range. Data transfer from the sensor to the CPU can be either CPU-initiated (*polling*) or sensor-initiated (via *interrupt*). In case it is CPU-initiated, the CPU has to keep checking whether the sensor is ready by reading a status line in a loop. This is much more time consuming than the alternative of a sensor-initiated data transfer, which requires the availability of an interrupt line. The sensor signals via an interrupt that data is ready, and the CPU can react immediately to this request. From an engineer's point of view, it makes sense to classify sensors according to their output signals. This will be important for interfacing them to an embedded system.

Binary sensors are the simplest type of sensors. They only return a single bit of information, either 0 or 1. A typical example is a tactile sensor on a robot, for example using a microswitch. Interfacing to a microcontroller can be achieved very easily by using a digital input either of the controller or a latch. It shows how to use a resistor to link to a digital input. In this case, a pull-up resistor will generate a high signal unless the switch is activated. This is called an "active low" setting. A number of sensors produce analog output signals rather than digital

signals. This means an A/D converter (analog to digital converter) is required to connect such a sensor to a microcontroller. Typical examples of such sensors are:

- Microphone
- Analog infrared distance sensor
- Analog compass
- Barometer sensor

Digital sensors on the other hand are usually more complex than analog sensors and often also more accurate. In some cases the same sensor is available in either analog or digital form, where the latter one is the identical analog sensor packaged with an A/D converter. The output signal of digital sensors can have different forms. It can be a parallel interface (for example 8 or 16 digital output lines), a serial interface (for example following the RS232 standard) or a "synchronous serial" interface. The expression "synchronous serial" means that the converted data value is read bit by bit from the sensor. After setting the chip-enable line for the sensor, the CPU sends pulses via the serial clock line and at the same time reads 1 bit of information from the sensor's single bit output line for every pulse (for example on each rising edge. Encoders are required as a fundamental feedback sensor for motor control. There are several techniques for building an encoder. The most widely used ones are either magnetic encoders or optical encoders. Magnetic encoders use a Hall-effect sensor and a rotating disk on the motor shaft with a number of magnets (for example 16) mounted in a circle. Every revolution of the motor shaft drives the magnets past the Hall sensor and therefore results in 16 pulses or "ticks" on the encoder line. Standard optical encoders use a sector disk with black and white segments together with an LED and a photo-diode. The photo-diode detects reflected light during a white segment, but not during a black segment. So once again, if this disk has 16 white and 16 black segments, the sensor will receive 16 pulses during one revolution.

Power Engineering

Text 1.
Electric Power Plants

Electric power is generated at electric power plants. The main unit of an electric power plant comprises a rime mover and the generator which it rotates. In order to actuate the prime mover energy is required. Many different sources of energy are in use nowadays. To these sources belong heat obtained by burning fuels, pressure due to the flow of air (wind), solar heat, etc.

According to the kind of energy used by the prime mover, power plants are divided into groups. Thermal, hydraulic (water-power) and wind plants form these groups.

According to the kind of prime mover, electric power plants are classed as

a) Steam turbine plants, where steam turbines serve as prime movers. The main generating units at steam turbine plants are the turbogenerators. Steam turbine plants belong to the modern, high-capacity class of power plants.

b) Steam engine plants, in which the prime mover is a piston-type steam engine. Nowadays no large generating plants of industrial importance are constructed with such prime movers. They are used only for local power supply.

c) Diesel-engine plants; in them diesel internal combustion engines are installed. These plants are also of small capacity, they are employed for local power supply.

d) Hydroelectric power plants employ water turbines as prime movers. Therefore they are called hydroturbine plants. Their main generating unit is the hydrogenerator.

Modern wind-electric power plants utilize various turbines; these plants as well as the small capacity hydroelectric power plants are widely used in agriculture

Text 2
Steam Power Plants

The function of a steam power plant is to convert the energy in nuclear reactions or in coal, oil or gas into mechanical or electric energy through the expansion of steam from a high pressure to a low pressure in a suitable prime mover such as a turbine or engine. A noncondensing plant discharges the steam from prime mover at an exhaust pressure equal to or greater than atmospheric pressure. A condensing plant exhausts from the prime mover into a condenser at a pressure less than atmospheric pressure.

In general, central-station plants are condensing plants since their sole output is electric energy and a reduction in the exhaust pressure at the prime mover decrease the amount of steam required to produce a given quantity of electric energy. Industrial plants are frequently noncondensing plants because large

quantities of low-pressure steam are required for manufacturing operations. The power required for operation of a manufacturing plant may often be obtained as a by-product by generating steam at high pressure and expanding this steam in a prime mover to the back pressure at which the steam is needed for manufacturing processes.

The steam-generating unit consists of a furnace in which the fuel is burned, a boiler, superheater, and economizer, in which high- pressure steam is generated, and an air heater in which the loss of the energy due to combustion of the fuel is reduced to a minimum. The boiler is composed of a drum, in which a water level is maintained at about the mid-point so as to permit separation of the steam from the water, and a bank of inclined tubes, connected to the drum in such a manner as to permit water to circulate from the drum through the tubes and back to the drum. The hot products of combustion from the furnace flow across the boiler tubes and evaporate part of the water in the tubes. The furnace walls are composed of tubes which are also connected to the boiler drum to form very effective steam-generating surfaces. The steam which is separated from the water in the boiler drum then flows through a superheater which is in effect a coil of tubing surrounded by the hot products of combustion. The temperature of the steam is increased in the superheater to perhaps 800° to 1100° F, at which temperature the high- pressure superheated steam flows through suitable piping to the turbine.

Since the gaseous products of combustion leaving the boiler tube bank are at a relatively high temperature and their discharge to the chimney would result in a large loss in energy, an economizer may be used to recover part of the energy in these gases. The economizer is a bank of tubes through which the boiler feedwater is pumped on its way to the boiler drum.

A reduction in gas temperature may be made by passing the products of combustion through an air heater which is a heat exchanger cooled by the air required for combustion. This air is supplied to the air heater at normal room temperature and may leave the air heater at 400° to 600° F, thus returning to the furnace energy that would otherwise be wasted up the chimney. The products of combustion are usually cooled in an air heater to an exit temperature of 275° to 400° F, after which they may be passed through a dust collector which will remove objectionable dust and thence through an induced-draft fan to the chimney. The function of the induced-draft fan is to pull the gases through the heattransfer surfaces of the boiler, superheater, economizer and air heater and to maintain a pressure in the furnace that is slightly less than atmospheric pressure. A forced-draft fan forces the combustion air to flow through the air heater, duct work, and burner into the furnace.

Coal is delivered to the plant in railroad cars or barges which are unloaded by machinery. The coal may be placed in storage or may be crushed and elevated to the overhead raw-coal bunker in the boiler room.

The coal flows by gravity from the overhead bunker to the pulverizer o mill through a feeder which automatically maintains the correct amount of coal in the mill. In the mill the coal is ground to a fine dust. Some of the hot air from the air

heater is forced through the mill to dry the coal and to pick up the finely pulverized particles and carry them in suspension to the burner where they are mixed with the air required for their combustion and discharged into the furnace at high velocity to promote good combustion.

The high-pressure, high-temperature steam is expanded in a steam turbine which is generally connected to an electric generator. From 3 to 5 per cent of the output of the generator is needed to light the plant and to operate the many motors required for fans, pumps, etc., in the plant. The rest of the generator output is available for distribution outside the plant.

The condensed steam, which is normally at a temperature of 70° to 100° F, is pumped out of the condenser by means of a hot-well pump and is discharged through several feed-water heaters to a boiler feed pump that delivers the water to the economizer.

Most steam power plants of large size are now being built for operation at steam pressures of 1500 to 2400 psi, and in some plants pressures up to 5000 psi are being used. Steam temperatures of 1000° to 1100° F are in general use turbinegenerator capacities of 250,000 kw (1 kilowatt = 1.34 horsepower) are common, and units of 500,000 kw are in operation. Steam-generating units capable of delivering 3,000,000 lb of steam per hr are now in operation. Overall efficiency of the plant from raw coal supplied to electric energy delivered to the transmission line depends upon size, steam pressure, temperature, and other factors, and 40 per cent is now being realized on the basis of a full year of operation.

Text 3
Internal-Combustion-Engine Power Plants

The internal-combustion-engine power plant including essential auxiliaries is shown diagrammatically in Fig.2. The fuel is burned directly in the cylinder of the engine or prime mover, and the high pressure thus generated drives the piston downward and rotates a crankshaft.

Air is supplied to the engine through a silencer and cleaner the function of which is to reduce noise and remove dust which would accelerate cylinder and piston wear if allowed to enter the cylinder.

A supercharger is installed in the air-intake system. The function of the supercharger is to increase the amount of air supplied to the cylinder by acting as an air pump. This in turn permits burning more fuel and obtaining more power from a given size of cylinder. An intake manifold is used to distribute the air equally from the supercharger to the various cylinders of multicylinder engine.

The exhaust system consists of an exhaust manifold for collecting the discharge gases from each of the cylinders into a common exhaust line, an exhaust silencer or muffler for reducing noise, and the exhaust stack for disposing of the exhaust gases to the atmosphere without creating a public nuisance.

The cooling system includes a pump for circulating water through the cylinder jackets and heads of each cylinder and a heat exchanger to remove the

energy absorbed in the engine by the cooling water. The heat exchanger may be air-cooled as in the automobile radiator, or it may be water-cooled. Seldom is raw water fit to circulate directly through the jackets of an internal-combustion engine.

The lubricating oil may be passed through a cooler, filter, and reservoir and is supplied to the engine under pressure by means of an oil pump, usually to a hollow crankshaft. The oil serves as a lubricant for the rubbing surfaces of the engine and also as a coolant.

The fuel system consists of a storage tank from which the fuel may be supplied to a small day tank or reservoir. The oil is filtered and pumped as needed to the fuel-injection system which is an integral part of the engine.

Since the fuel is burned directly in the cylinder of the prime mover, the internal-combustion-engine power plant is simpler and more compact than the steam power plant. It is seldom built in engine sizes of more than 4000 hp, whereas a 300,000-hp steam turbine is common. It is more efficient than a steam power plant of comparable size but not so efficient as large steam central-station plants, which moreover can burn a cheaper grade of fuel. Consequently, the internal-combustion engine is used primarily in the transportation field for driving automobiles, buses, trucks, tractors, locomotives, ships, and airplanes where a compact, light-weight, efficient power plant of relatively small size is necessary.

Text 4
Gas-Turbine Power Plants

Air is compressed in an axialflow compressor from atmospheric pressure to a pressure which is usually between the limits of 75 and 120 psi. The compressed air may then flow through a regenerator or heat exchanger in which the hot exhaust gas from the turbine is utilized to increase the temperature of the air, thereby recovering energy that would otherwise be lost to the atmosphere. Fuel is sprayed into the combustor in which it combines chemically with the oxygen in the air to produce a hot gas leaving the combustor at some temperature between 1200° and 1700° F. The pressure of the air decreases slightly between the compressor discharge and turbine inlet because of friction, but the increase in temperature in the regenerator and combustor results in more than doubling the volume. The hot gas then expands in the turbine in which it does enough work to drive the compressor as well as an electric generator or some other suitable machine. The exhaust gases leaving the turbine are cooled in the regenerator before being discharged to the atmosphere.

Where space and weight limitations are critical or fuel is cheap, the regenerator may be omitted with a substantial decrease in efficiency. The turboprop engine as applied to the airplane operates without a regenerator and with a geared propeller as the load. In the turbojet engine as applied to the airplane, the turbine develops only enough to drive the compressor and exhausts into a nozzle at a back pressure considerably in excess of atmospheric pressure. the rearward

expansion of the exhaust gases from the nozzle at high velocity creates the thrust which propels the airplane.

Text 5
Electric Power Plants

The two main types of power plants traditionally have been the fossil-fuel steam-electric plant and the hydroelectric plant. Other types, including internal-combustion-engine plants and nuclear plants also have been built. The selection of a particular type of generating plant and its location involves consideration of a number of factors such as plant, fuel, and transmission line costs; availability of cooling water; and environmental considerations.

For several reasons, the relative importance of the various types of power plants has been shifting. Good sites for new hydroelectric plants have become scarce in many countries. Distribution networks have been extended so that less expensive power from large steam-electric stations has been replacing power from smaller diesel-generator units. Nuclear-electric power plants have been built instead of fossil-fuel steam-electric plants because the cost of coal and oil has been increasing.

In the United States in 1970, fossil-fuel steam-electric plants accounted for 76% of the power generated, hydroelectric plants for 16%, and nuclear plants for 2%.

In 2000 45% of the electric power in the United States is generated from fossil-fuel steam-electric plants, 45% from nuclear plants, and 10% from hydroelectric plants.

Automation

Text 1
Automation of Train Operation

With complete dynamic speed profile present on the train, in principle, train operation could be automated. However reasons which obstruct automation are mainly the lack of ability of automated systems to react to unpredicted situations such as obstacles on the track. Therefore, a further necessity for full automation of train operation is the continuous detection of external objects or their exclusion by barriers which cannot be passed either intentionally or unintentionally. This is very expensive on extended networks, but is practicable in some cases of metropolitan railways due to the limited extent of the network and the high density of traffic which makes the investment economically reasonable. Complete protection is never possible against very rare events, such as an object falling from a passing aircraft onto the railway.

Altogether, the following steps of automation can be distinguished:

- Manual driving without any automation. The driver is fully responsible for driving. This is the case without train protection systems.

- Manual driving with technical supervision. This is the case of a train protection system supervising the driver and enforcing safety in case of driver's error.

- Partially automatic operation. This is the case when some tasks of driving regulation are assigned to the driver and the others to automatic systems. An example of ATC on Japanese high-speed lines where the driver is responsible for acceleration and platform stopping and the automatic system for safety related braking processes. Other examples are several modern systems with calculation of dynamic speed profile where the driver can select between manual and automatic driving.

- Automatic driving with human supervision. Here the train is normally driven automatically but the driver watches the track and can take actions in case of danger or technical failure. Although this would be technically possible in many modern systems, it is rarely done for psychological reason. A driver whose only task in normal operation is watching the processes would not be able to act properly in emergency situations due to lack of attentiveness and driving practice. This can be overcome by giving the driver some positive tasks as implemented on the Victoria Line of London Underground in 1968.

- Full automation. In these systems no driver who would watch continuously the track is present on the train. However, in some cases a person who is normally in charge of other tasks (such as selling tickets) can take control if necessary. Fully automatic driving is currently applied on some single metropolitan lines (e.g. Paris, Lille, London, Vancouver and Copenhagen) and for special purposes such as airport shuttle trains.

Text 2
Railway Automation

At present control of high-speed trains is semi-automatic since they are automatically forced to comply with permissible speeds at any instant. Stops at station platforms are under the driver's control.

The whole line in Japan, for example, is directly controlled from Tokyo and for this purpose is divided into four systems. The state of the line is continuously surveyed and information is transmitted at high speed to the control centre. Each train automatically identifies itself by generating a unique frequency as it passes fixed ground equipment and the information is displayed on the control panel at Tokyo. Trains entering stations automatically set the points system according to classification, i.e. whether super express, express or freight.

One interesting but simple safety feature enables the operator on the line to stop the train in an emergency. It consists of push-button switches placed at intervals of 50 m. Operation of the switch completes the circuit, and the consequent indication in the driver's cab of an approaching train causes the brakes to be applied automatically when at an appropriate distance from the danger position. All the circuits are fail-safe, and the possibility of an accident due to human error has been virtually eliminated.

Great work is being carried out in order to improve circuit's performance. It means introduction of such techniques as programmed control, obstacle detection by guided radar, controlled braking to a fixed point and centralized computer control. Extensive research is under way in our country to utilize television technique in industry, science and agriculture. Some years ago one of the research institutes of our country designed a television apparatus which is now used in railway transport to record the serial numbers of freight cars arriving at a station. As a train pulls in at a station, somewhere at a distance of ten kilometers an operator sees this train on a screen of his television set. The operator reads aloud the serial number of the freight cars and they are recorded by a tape recorder. On another television set the operator can see all the railway lines in a station. The operator only has to press the button and another station will appear on the screen. These installations are used in classifications yards for shunting operations.

The Central Research Institute of the Railways Ministry is designing a new television apparatus which will enable engine drivers «to see» the condition of the freight car even when it is dark.

Text 3
Basic Automatic Block Signals

Automatic Block Signal, or ABS, systems consist of a series of signals that govern blocks of track between the signals. The signals are automatically activated by the conditions of the block beyond the signal. Signals in ABS territory do not denote occupancy. Signals in ABS territory are set up to denote the most restricted

indication. For instance, although train wheels «shunt» the track, something metal may also «shunt» the track.

Automatic block signals also detect the status of a following signal. If a signal is displaying a stop indication, the preceding signal will display an aspect that warns the train crew that the following signal may require the train to stop; such as, and approach or restricting signal, denoted by yellow or red aspects, respectively.

ABS systems detect track occupancy (by a train or obstruction) by passing a low-voltage current through the track between the signals and detecting whether the circuit is closed, open, or shorted. A train's metal wheels and axles will pass current from one rail to the other, thereby shorting the circuit. If the ABS system detects that the circuit is shorted between two signals, it understands that a train, or obstruction is occupying that block and will «drop» the signals (display a restricting or stop indication) on either side of that block to prevent another train from entering (if the block is governed by a positive stop).

ABS system electronics are also able to detect breaks in the rail or improperly-lined switches (if the switch is established in the circuit), which result in an open circuit. These will also cause the signal's aspect to «drop», preventing any trains from entering the block (if the signal system prevents it), and running the risk of a run-through switch or derailment. Train crews that operate in ABS, often operate with track warrants or traffic control.

Text 4
Railway Automation

The HollySys' Railway Automation group consists of top notch management team with innovative talent and technological knowledge. The group is committed with systematic approach in providing automation solution to the railway industry. Through years of research, development, and on-site experiences gained, HollySys helps to drive the profound technology in railway automation for a better future with long-term development and commitment in building a practical, economical, advanced, professional, safe, reliable, and competitive railway automation platform.

HollySys developed its core railway automation technologies based on deep understanding of the railway transportation business and its production status in China. HollySys collaborates with the users and tailor its products based on user experience and improvements the process without compromising any aspect in safety. HollySys railway automation platform consist of independent intellectual property rights of high- tech products including product that has obtained the patent certificate, certification of software copyrights, and newly recognized technological product certification.

HollySys' railway automation products are researched, developed, produced and used separately for different railway bureau or railway enterprise company such as Harbin, Shenyang, Jinan, Beijing, Shanghai, Kunming, Nanchang,

Liuzhou, Lanzhou, Guangzhou, etc. HollySys has received widespread high praise of the products and solution which creates both a good social benefits and economic benefits for China.

Through establishing a long-term technical cooperation with several local institutes and the promotion of the high technological content & information, the market prospective of railway industry is exciting in China leading to several new profound products for the railway, rail signaling, trains, ground station control, etc.

HollySys' Rail Control System solution includes the Automatic Train Protection (ATP), Train Control Center (TCC), Lineside Electronic Unit (LEU), computer interlocking systems, and multi-mode track circuit, etc. The CTCS2-200 train control system for 200km/hr rail network meets the requirements for the speed-up of existing lines and for the train operational safety of passenger dedicated lines. The HollySys train control system solutions have been successfully utilized in the 6th Nationwide Railway Speed-up, making contribution to the China's railway industry. Approximately about 200 sets of ATP system have been utilized in the CRH1 and CRH2 EMU in the 8th railway bureaus. The TCC and LEU equipment have been successfully applied into four main line railway; Beijing-Shanghai railway, Beijing-Harbin Railway, Shanghai-Kunming Railway, and Guangzhou-Shenzhen Railway. Over 100 computer interlocking system projects have been completed in the subway and light rail stations as well as railway stations owned by industrial enterprises in aspects of metallurgy, mining, port.

Text 5
Automatic Train Operation System

Glasgow Subway's fleet of trains was fitted with an Automatic Train Operation (ATO) system in 1980, making the trains virtually driverless apart from providing the passenger safety and emergency operation functions.

Mott MacDonald was commissioned by the then Strathclyde Passenger Transport (SPT) as principal contractor to design, develop, commission, install and support a modern technology replacement for the ATO system onboard the Glasgow Subway fleet of trains.

The main component of the ATO system is the Programmable Logic Controller (PLC) based onboard controller which:

- Accepts an enabling signal (start-permit) from the signalling system to allow the drivers to initiate the transit to the next station
- Drives the train in auto to the next station
- Actions and maintains the appropriate speed restrictions
- Applies a programmable braking profile so that the train comes to a smooth stop at the correct stopping point in each station.

The status of the onboard ATO equipment and the trackside beacons that it has communicated with is uploaded to a remote monitoring terminal (comprising a client/server SCADA application) at stations that are networked to the main depot.

This means that alarms and warnings can be presented on screens in the depot to aid early warning of possible future failures and facilitate timely maintenance activities.

Engineering support is provided through an engineer's maintenance terminal which connects directly into the ATO onboard controller to monitor the operation of the onboard equipment, configure the train operating characteristics (braking profile, stopping position etc.) or to provide a data logger facility when investigating operational and performance problems.

The software based onboard and station side PLC equipment has been developed to SIL-2 in accordance with the European and railways industry guidelines for safety related software. This has included ensuring that the interface to the engineer's maintenance terminal, when configuring the train, does not permit the engineer's terminal to set configuration parameters that are outside permitted bounds or inconsistent with other operating parameters.

A full systems assurance and qualification programme was applied to the project following BS EN 50126 and BS EN 50129 guidelines to ensure the safe operation of the subway system under all foreseeable failure conditions of the ATO system components. Training has been provided in all aspects of operation and maintenance of the system and its components and we continue to provide operational and maintainer support of the system.

Service and Maintenance Management in Transport Sector

Text 1
From the Automobile to the Concept of Auto-Mobility

To better understand the current change in mobility, we need to take a close look at the major historical periods of the automotive industry—from Fordism to the manufacture of driverless cars—and at how vehicles were devised at these different stages. Mobility is linked to social organization and can profoundly modify the attitudes of modern society to time, space and inter-personal relationships. Thus, by taking a historical perspective, we show that the very nature of mobility is in the process of changing. The socio-economic realities of the last decade has accelerated a change in the car's image—with a focus on downsides like noise, pollution, excessive purchase and usage costs, time wasted on journeys, etc. A car becomes an auto-immobile when subject to urban congestion. New behavior patterns, uses and mobility requirements are emerging that no longer view vehicles as an object of pleasure, freedom and social mobility, and in which usage can substitute ownership. Users today are not only seeking more rational management of journey times and mobility costs, but ultimately, they want to choose mobility rather than be subjected to it. The first issue concerns the characterization of this change. Does it involve an evolution in the mobility system, a change to the technological business model, or the emergence of a new paradigm? These questions are decisive because they determine the directions of the different scenarios of technico-economic or societal change. The first part will outline the development stages of the automobile which, according to (Oliver Wyman 2015), prefigure "manufacturers' inevitable preparation for radical change". The second part shows that technological rupture is accompanied by a change in usage and behavior involving new positioning for all mobility stakeholders. In its first stage, the motor car was a European-American concept defined as a personal or family tool used for traveling from one point to another, as best as possible, as fast as possible, and with optimum safety, comfort, ergonomics, etc. The first level of innovation therefore involves optimizing the car as an object of personal or family transportation. For a century, the car's technical fundamentals (i.e. 4 wheels, a motor and a body) changed little. Cars were massively produced in the Triad countries, and constituted a basic component of social achievement through personal mobility. The automobile was an object of social recognition and value to be owned. This positive image was accompanied by an idea of pleasure and personal freedom. The automobile was an object "to be seen" (cf. the Concours d'Elégance) with incremental innovations mostly centered on design and comfort. This first stage has been taking place since the 1990s in emerging countries in Asia, with a range of innovations aimed at making the car a symbol of social achievement as well as an efficient means of travel. Whether internal combustion, electric or hybrid, cars as a means of transport are still conceived with the same idea of mobility. The modes of innovation are

incremental; they center on ergonomics to suit lifestyles and on reducing general energy costs, CO_2 emissions and total cost of ownership. Car manufacturers are the only ones to decide on these modes.

Text 2
Transformation of Value Chain and Value Proposition Through Innovations

Together with the enforced dependency on oil suppliers and oil exporting countries, negative effects on economic growth as well as environmental degradation are expected if no effective measures are taken to increase efficiency and promote alternatives to the current mobility paradigm. Governments and politics react to the above mentioned issues in many respects. Regulatory interventions on the international (e.g. post-Kyoto protocol agreement, "low carbon economy"-strategy of the European Union), national (e.g. bonus-malus system in France) and local (e.g. inner city tolls in London) level can be identified. Innovation in vehicles can drive the change for individual mobility. As a first step numerous vehicle manufacturers are optimizing the combustion engine in order to reduce the fuel consumption and thereby the correlating CO_2 emissions: cylinder deactivation, variable valve train, turbocharging and downsizing, utilization of exhaust gas energy, direct injection, new combustion, variable compression etc. can improve the current powertrain technologies. Further possible strategies are the improvement of efficiency through aerodynamics, improved drive resistance, improved energy efficiency of car components (e.g. power steering, air conditioning, alternator) or light weight design. Another approach could finally be to look for alternative fuels like biofuels, hydrogen or electricity. A brief evaluation in terms of CO_2 emissions and energy efficiency of the mentioned alternative fuels will be conducted within the next section. These incremental and radical innovations focus on improving the current mobility paradigm but do not impact the mobility paradigm as a whole. Digitalisation is another driver of change which will transform our economies by shaping the 4th industrial revolution. Increasing returns (economies of scale, economies of scope), network effects and lock-in effects are the keys of this new economy which will reshape the industry structure. The current auto-industry's value chain structure and internal rivalry between OEMs will evolve towards a play of competing mobility eco-systems with new parties and with even the customer as a mobility partner. The customer and the satisfaction of his/her mobility needs will move in the focus of interest (customer centricity) and generate the necessity of a holistic approach in which products and services are bundled and offered to consumers as a system. Through digitalisation and especially reduction of transaction costs, new leaders of the value chain (shapers) will emerge to satisfy these needs. The shapers will be able to combine bicycles, scooters, cars or trains into a one face to the customer mobility service and trigger new and innovative business models with an added value for the customer. To provide these services the shapers will need to associate partners

from the automotive industry, information technology, telecommunications, utilities and mobility service providers such as car sharing or railway companies. The process of growing digitalisation and servitization, which disrupts established economic and business rules of thumb and creates a "creative destruction" process will be detailed.

Text 3
Public Policies and Electric Vehicle Development

Although, for a century, EV have been emerging technologies, it seems that prospective scenario actually show exploding trends for the forthcoming decade. Navigant research report shows that BEV (Battery-Electric-Vehicle) and PHEV (Plug-in-Electric-Vehicle) sales will reach 3 million by 2024. The increase in EVs sales depends on 4 factors: – Technology developments: better batteries, faster charging, wireless charging – Air pollution concerns: cities regulations on CO_2 emissions – Business model innovation: shared mobility leveraging EVs development – Policies and Regulations: fiscal and financial incentives. Around the world, financial incentives for the purchase of an electric vehicle are expanding and start to show some results with a real increase in sales, even if the market is still narrow. The Tokyo's council started early 2000s to help Japanese drivers to by electric or hybrid cars with financial incentives. This policy has proved fruitful since, on the one hand, diesel cars almost disappeared in Japanese cities and, on the other hand, car makers made huge efforts to design less polluting car with electric, hybrid or even hydrogen engines. Meanwhile, diesel vehicles have drastically decreased not only in Tokyo but in the whole archipelago. The Chinese government has also decided to boost electric cars sales: it forecasts 5 million cars sales with alternative engine (electric or hybrid) in 2020 and big investments on national electric infrastructure have been made since 2014. "Government policy had already started to encourage electro-mobility in 2001, when a key special project for EVs became part of the national high-tech R&D program. In 2009, the government identified EV production as one of several strategic emerging industries, creating a range of very attractive incentives and setting the ambitious targets of producing two million BEV/PHEV by 2020". In July 2014, the Chinese government cut off a 10 % tax for drivers buying an electric or a hybrid car associated with a RMB 6000 allowance (about $1000). These incentives are also valuable for foreign cars. US$ 16 billion will be spent to build a charging station network for electric cars. This infrastructure development is also supported by foreign car makers such as Tesla, the American electric car maker, seeking for new outlets for its production. In 2014 T possesses 200 electric stations and agreed with China Unicom, a Chinese telecom company, to build 400 more stations. In France, the government confirmed his willing to increase the number of electric cars on the roads mainly in urban areas and introduced a super allowance (€10.000) for the replacement of a car older than 13 years by an electric car. This allowance may imply more than 1.5 million cars. The French government aims at supporting

electric cars' growth by strengthening restrictions and taxes on polluting cars. The development of electric vehicles in France also leans on the modernization of the automotive sector, car makers and OEMs: the Fund for OEMs modernization (FMEA Fund) has been transformed into "Fund Future car", with €270 million to promote the emergence of new champions in the sector.

Text 4
The Car in the Next Future: From Possession to Usage

As mentioned in the previous examples, the economic model of the multimodal dynamics more and more includes the existence of car sharing or carpooling that encourages a more sustainable and collaborative mobility. On the French market, the number of organizations proposing to bring together cars' owners with non-regular drivers is growing (there are for example Buzzcar, Greenie01, Deways, Koolicar, Livop, Mavoiturealouer.com, Voiturelib). Different studies on car-sharing seem to converge to the following conclusion: the number of users will increase significantly over the next years. The consulting company Navigant Research plans a phenomenal increase of the world market of the ride sharing, passing from 1 billion dollars in 2013 to more than 6 billion in 2020. The analyses of Ranke shows a similar progression, claiming that the number of users at the European level should indeed increase from 700,000 in 2013 to more than 15 million in 2020, and the number of shared vehicles from 20,000 to 240,000 over the same period. The major French car manufacturers also entered the area, like the Citroën Company whose website comes to enrich new offers car-sharing oriented. These new services are car-sharing and carpooling. Starting from the premise that cars remain on average immobilized 90 % of the time, Citroën offers its customers to lend their vehicle when they do not use it. It is quite symbolic to see that an automaker, whose business model relies on the sale of cars, promote car sharing by definition opposed to buying car by individuals. Another form of car-sharing, i.e. carpool-pooling, continues to make progress thanks to the rise of social networks and smartphones' applications. Indeed, thanks to the emergence of "dynamic car-sharing" (also called "real-time car-sharing"), greater flexibility and greater speed of communication allow to offer instant car-sharing. 10 % of U.S. citizens use carpool, a figure that is expected to triple by 2020. The French company Blablacar, created in 2006, recorded 10 million users in 2014 and is expanding worldwide. Indeed, the emergence of the "dynamic ride sharing" allows both a better flexibility and a higher speed of mobility. This dynamic ride sharing is also boosted by the democratization of smartphones and their applications offering geo-localization for a quick getting in touch. Chassignet shows that there are in reality several car sharing's types, among which the "direct track" allows the customer to let the car in any station or even on the public road (for example, Autolib' in Paris) or the "user-to-user" sharing organized on a web community platform managing direct links between car owners and car users (for example: Buzzcar, Drivy, Ouicar).

Text 5
Reworking the Economic Models of the Automotive Industry for the Responsible Development of the Entire Ecosystem

The need to review the automotive industry's economic models in line with responsible development does not date from the 21st century. Back in 1990, Nicolas Hayek declared his intention to create the Swatchmobile based on interdependent trends that he thought indicated a change in the car industry: integrate an ecological dimension, resolve urban journey problems, move from "ownership to hire" and create added value on services. "The idea behind the Swatchmobile project is based on a simple observation: in a built-up area, a car travels an average of 30 km per day, carries 1.2 passengers and remains stationary for over 90 % of the day. During the remaining 10 %, the backseats are usually taken up by the newspaper. Generously, we have built a car for two". Ahead of its time, the Swatchmobile did not manage to replace the old model with a new conception of urban mobility. The need to strike an alliance with a carmaker led Mercedes to take over the concept and transform Hayek's vision into a "car", despite the fact that his radical aim was to make the Smart anything but a car. Could this new concept of mobility and the role of the car become the rule in the very near future, while carmakers remain caught up in an inflexible production system? Two factors argue in favor of this transformation, i.e. the massive arrival of new entrants free from technological and industrial constraints, and societal changes associated with new public policies. The first driver of change—the arrival of new entrants—obliges carmakers to profoundly reconsider their strategy for the coming decade. These new entrants are of course Tesla and Google, as well as less well-known Chinese industrials like BYD, whose European director confirmed his intention to open at least one production plant on the continent at the 2015 Customer Experience Summit. BYD specializes in batteries for cell phones and is the world leader in Lithium-Ion accumulators, with 30 % of the market. Established in 1995, the industrial started diversifying in 2003 when it invested in the car sector. This daring move, combined with its battery expertise, made the young automobile manufacturer one of the leading players in electric mobility in China. Its catalogue includes electric buses and individual electric and hybrid rechargeable cars. Among the latter, the Qin sedan and the Tang Plug-in Hybrid SUV are due to arrive on the European market in 2017. In partnership with Daimler, BYD now offers an electric Denza sedan with 300 km of autonomy using a battery with a capacity of 47.5 kWh. Without doubt, automobile manufacturers are at the crossroads of two major changes: the transition towards the ecosystem of intelligent mobility, and the performance economy. These two major trends aim at the implementation of sustainable, responsible economic models. Since sustainable development questions are particularly aimed at companies in the automotive industry, carmakers have understood the need to organize a global response involving multiple collaborations within the entire mobility ecosystem, even if that

means offering products that compete head on with their car sales, such as Citroën, which sells, hires and shares its vehicles. Car industrials are obliged to develop a sustainable economic model, in other words: "A sustainable automotive industry is one that creates life-enhancing employment for communities over a long period of time. It has zero net consumption of physical resources in production. It is consistently profitable while being able to withstand short-term fluctuations in economic circumstances. And it produces products that themselves do not pollute or otherwise degrade the environment, are fit for purpose, and are designed for longevity. All of these features suggest that, over time, manufacturing as such (of new, complete products) would become only a small part of the business model, that concepts such as productservice systems (PSS) are more appropriate. It is recognized that profitability is absolutely vital for sustainability. However, profitability is a necessary but insuf- ficient condition for sustainability: the environment and social dimensions must also be included". This new economic model connects the fourfold product-service-structuremarket to the new technologies of electro mobility and to the societal shift towards a sharing, circular, usage, etc. economy for which digital technologies permit the development and open the way to responsible, sustainable mobility.

Mechanical Engineering

Text 1
What is mechanical engineering?

Mechanical engineering Encompasses the generation, conversion, transmission, and utilization of mechanical and thermal energy and includes the design, construction, and operation of all kinds of mechanical and thermal devices and systems. Of all the engineering disciplines, mechanical engineering offers the greatest breadth, flexibility, and individuality. Indeed, a mechanical engineering education is an ideal preparation for working and living in a technological world. Mechanical engineering emerged as a new field during the industrial Revolution, when the invention of the steam engine revolutionized manufacturing and transportation. As society has grown increasingly dependent upon technology the theoretical and practical knowledge base of the profession has expanded dramatically. Today there is scarcely any area of everyday life that has not been affected by mechanical engineering.

The future of the profession has never been more promising. For students with a keen interest in science and mathematics and desire to apply their knowledge to new and existing products and processes, mechanical engineering offers exciting career opportunities.

Mechanical engineering has been recognized as a separate branch of engineering since the formation of the Institution of Mechanical Engineers of Great Britain in 1847. The development of the textile machinery, steam engines, machine-tools, pumping machinery, turbines and locomotives of that time made such a diversity interest for civilian engineers that these and allied subjects were called mechanical engineering.

Mechanical engineering deals with the design, construction and operation of machines and devices of all kinds, and with research and sciences upon which these depend. Among these machines are prime movers such as engines and turbines using air, gas, steam and water as operating media; pumping machines and other hydraulic apparatus; steam boilers, heating, ventilating, air conditioning and refrigerating equipment, transportation structures used in aviation; automotive engineering, railroads and ships, machine-tools, special machines for industry and for construction of buildings, railroads and harbors. In fact, mechanical engineering enters into the work of all engineers whose machines are to be developed for the processes of specialists of the other branches of engineering. To understand better the extent of the activities and interests of mechanical engineers, the following lists of the professional divisions and technical committees of the American Society of Mechanical Engineers (ASME) are given: Professional divisions; applied mechanics, aviation, fuel, graphic arts (printing), heat transfer, hydraulics, industrial instruments and regulators, management, materials handling, metals engineering, oil and gas power, process industries, production engineering, railroad, rubber and plastics, textiles, wood industries.

Text 2
Thermodynamics

Thermodynamics is that branch of physics which deals with the conversion of mechanical energy into thermal energy and the reverse process of transforming heat into work.

The production of heat by mechanical means may be illustrated by the phenomenon of friction. For example, fire may be started while rubbing together two sticks of wood. Heat is developed when compressing a gas. The transformation of heat into work may be illustrated by operation of a steam or gas engine by means of which heat may be transformed into mechanical energy.

So a heat engine is a machine for transforming heat into mechanical energy, the most important of the practical heat engines being the steam engine and the internal combustion engines.

To transform energy from any of its numerous forms into heat is a comparatively simple process. To transform heat into work is a different matter. Experience shows that any actual physical process, as the change of state of a system, is irreversible and is accompanied by a frictional effect. A strictly reversible frictionless process being an ideal, it may be approached but never attained. In the case of the ideal reversible process, there is no change in the quantity of available energy. But an actual irreversible process is always accompanied by a decrease of the amount of energy available for transformation. All transformations of energy are subject to two far-reaching laws:

1) The general law of conservation of energy, of which the following is a statement: the total energy of an isolated system remains constant and cannot be increased or diminished by any physical process whatever.

2) The law of degradation of energy. According to this law, the result of any transformation of energy is the reduction of the quantity of energy that may be usefully transformed into mechanical work.

The first law of thermodynamics is merely the law of conservation applied to the transformation of heat into work. It may be stated as follows: when work is expended in producing heat the quantity of heat generated is equivalent to the work done. And conversely, when heat is employed to do work, a quantity of heat precisely equivalent to the work done disappears.

The second law of thermodynamics is essentially the law of degradation of energy. Whereas the first law gives a relation that must be satisfied in any transformation of energy, it is the second law that gives information regarding the possibility of transformation and the availability of a given form of energy for transformation into work. A general statement of the second law is: «No change in a system of bodies that takes place of itself can increase the available energy of the system».

Text 3
Machines and Work

Defined in the simplest terms a machine is a device that uses force to accomplish something. More technically, it is a device that transmits and changes force or motion into work. This definition implies that a machine must have moving parts. A machine can be very simple, like a block and tackle to raise a heavy weight, or very complex, like a railroad locomotive or the mechanical systems used for industrial processes.

A machine receives input from an energy source and transforms it into output in the form of mechanical or electrical energy. Machines whose input is a natural source of energy are called prime movers. Natural sources of energy include wind, water, steam, and petroleum. Windmills and waterwheels are prime movers; so are the great turbines driven by water or steam that turn the generators that produce electricity; and so are internal combustion engines that use petroleum products as fuel. Electric motors are not prime movers, since an alternating current of electricity which supplies most electrical energy does not exist in nature.

The terms like work, force, and power are frequently used in mechanical engineering, so it is necessary to define them precisely. Force is an effort that results in motion or physical change. If you use your muscles to lift a box you are exerting force on that box. The water which strikes the blades of a turbine is an exerting force on those blades, thereby setting them in motion.

In a technical sense work is the combination of the force and the distance through which it is exerted.

To produce work, a force must act through a distance. If you stand and hold a twenty-pound weight for any length of time, you may get very tired, but you are not doing work in an engineering sense because the force you exerted to hold up the weight was not acting through a distance. However, if you raised the weight, you would be doing work.

Power is another term used in a special technical sense when speaking of machines. It is the rate at which work is performed.

In the English-speaking countries, the rate of doing work is usually given in terms of horsepower, often abbreviated hp. You will remember that this expression resulted from the desire of the inventor James Watt to describe the work his steam engines performed in terms that his customers could easily understand. After much experimentation, he settled on a rate of 33,000 footpounds per minute as one horsepower.

In the metric system power is measured in terms of watts and kilowatts. The kilowatt, a more widely used term, equals a thousand watts or approximately 1/3 horsepower in the English system.

Text 4
What do mechanical engineers do?

Because of the breadth of their preparation, mechanical engineers enjoy many professional options. Graduates of the mechanical engineering program work in a variety of industries:

Aerospace Heavy machinery
Automobile Metal forming
Chemical Mining
Communications Oceanographic
Computers Petroleum
Electric utilities Rubber and glass
Electronics Textile

Wherever mechanical engineers work, they usually specialize in one or more areas. Some conduct research, advancing engineering knowledge by experimenting with materials and processes. Others apply research data in the development of new or improved products. Some mechanical engineers concentrate on design, using practical as well as theoretical knowledge to specify parts and materials for a new device. Those who specialize in manufacturing analyze methods and equipment to find the most efficient productions techniques. When processes are unusually complex, mechanical engineers may head operations departments that assure the optimal functioning of a system. Mechanical engineers often combine their technical knowledge and their human relations skills to move into marketing and sales or to assume positions in management.

Mechanical engineering also provides a useful background for other professions, and some graduates choose careers in medicine, law, education, government, or business.

Demand for qualified mechanical engineers is high. Mechanical engineers have a wide range of job opportunities. They may be management, sales, development, research, or design or production engineers in industries such as food, steel, chemicals and heavy and light engineering. They also can work in service industries such as transport and gas, water and electricity.

Mechanical engineers are vital to the running of plants. Without them production would be impossible. Each plant is likely to be different. Some are large, some are small and most are complex. The main operational objectives of safety, efficiency and profitability are common to them all and demand a range of technical and personal skills from the engineers.

Mechanical engineers are concerned with machines, mechanisms and energy conversion. Mechanical equipment is at the core of the plants. Each plant is different from the next: the machines are particular to the process involved in making the end product and mechanical engineers are involved in their design, building and operation. They are at the forefront of technology: pressing the limits of material capability, developing new materials of construction, specifying complex machines and doing all of this with the most sophisticated design techniques.

Mechanical engineers' jobs are demanding and exciting. Their skills, technical and managerial, are used to the fullest. In plant operation the job is to

keep the plant running and stimulate the team to make better use of equipment to improve performance.

Mechanical engineers are at the core of production: they manage plant and equipment, they manage people. In fact, they manage our future.

Text 5
What do mechanical engineers study?

In the freshman and sophomore years, the mechanical engineering curriculum emphasizes mathematics, chemistry, physics, and basics engineering science. Juniors and seniors take courses in thermodynamics, heat transfer, fluid mechanics, dynamics and control, materials and manufacturing, and systems and design. In addition, seniors choose electives in areas of specialization such as turbo machinery, acoustics, power plant engineering, energy conservation, computer-aided design, materials processes, controls, and composites. Because of the diversity of a mechanical engineer's responsibilities, the curriculum also includes both required and elective courses in English, the social sciences, and the humanities. This broad-based preparation serves the needs of students who enter the profession immediately after graduation as well those who pursue graduate study.

The engineer typifies the twentieth century. He is making the vast contribution in design, engineering and promotion. In the organization and direction of large-scale enterprises we need his analytical frame of mind. We need his imagination.

He may be designing the product itself; inventing new products; testing the product, its components, and the materials in it; analyzing its performance and making a mathematical analysis.

He may be engaged in the development of the new product, making drawings and specifications.

He may be concerning himself with the development of a new production process, or the adaptation of a current process to a new product.

He may be utilizing his engineering know-how in determining the best processes and equipment for the mass production of high-quality products.

He may be the project engineer in charge of the design and installation of a highly automatic conveyer system for handling different kinds of parts between various assembly stations.

He may be working on designing and developing tools, dies, jigs, assembly fixtures, welding fixtures for the production of an automotive body.

In the 20th century the engineer has at his command many new sources of power. He works much to develop better materials especially new alloys for special purposes. He wants to make machinery automatic.

Information Technologies and Computer Engineering

Text 1
Ethernet: The Common Thread to Total Building Systems

Have you ever noticed how each Building Automation vendor boasts open architecture and interconnectivity? In fact, this claim usually means they openly connect to only devices they sell/support. Adding legacy equipment like protocols, mediums and connectors into the mix only exacerbates this problem. It's enough to frustrate the most seasoned integrators. However, a phoenix is rising from the ashes in the form of Ethernet to offer promise and hope for easing the plight of interconnectivity.

Of course, no solution is perfect and Ethernet has its drawbacks. However, most of Ethernets weaknesses have been aptly addressed making it increasingly accepted in scenarios where it may have been rejected in the past. For example, critics have pointed to its lack of rugged components, no determinism, and vendor acceptance. But, industrial grade switches, cables and connectors compensate for these fallbacks, and vendors are quickly adopting Ethernet as the new communication standard.

Linking Legacy Systems

One of the remaining challenges is connecting legacy systems to this world. This is a little like trying to put a jet engine into a model T, but such technology does exist. Take device servers for example. They are an ingenious solution that allows serial devices to communicate over IP networks. Many legacy devices from each building automation segment tend to have RS-232, 422, or 485 serial ports on board. Even lighting, time and attendance, fire, elevators and so on have serial interfaces, which can be connected to Ethernet using device server technology.

The key resides in separating the wheat from the chaff. Many device servers only provide basic serial encapsulation over TCP/IP; however, some vendors go the extra mile to provide a solution for building automation needs. One consideration is the number of serial devices that reside in a local area. Device servers and terminal servers are available with 1, 2, 4, 8, 16, 32 serial ports or more. While several offerings operate in environmentally protected areas, a new breed of device servers are available that operate in more challenging temperatures like -35 to +75 C. A rugged metal housing and several mounting options (wall, din rail or 19" rack) allow units to fit almost anywhere.

Text 2
Cloud Computing And Its Benefits – How Cloud Service Can Offer Solutions For Your Business

Advancements in technology are bringing new terms to the board game every year, and it can be difficult to explain the ever-evolving terms. Introducing

new IT business concepts to your employees is not always easy as you have to train staff which can be time consuming. North East Cloud have provided a little lesson on cloud, highlighting the benefits and how a cloud service can help your business.

To start with the basics, cloud is an online service which allows you to access all of your data, files and programmes over the Internet, as opposed to your hard drive. This makes your life a little easier as you don't have to carry X, Y and Z devices around to access files stored on different devices. All of your data is stored on servers connected to the Internet, and there are various forms of cloud depending on whether you're using the service as a business or as an individual. As an individual a common example is Google Drive; from a business perspective, services such as Concept IT are a good place to start.

Aside the ease of access to all of your files, there is a high level of security and trust associated with the Concept cloud services, who are based in the North East of England with two server centres in Durham and Gateshead. So in the unlikely event that something should go wrong in one of their centres, all of your data is backed up in the other.

Generally, one cloud service is provided to a user; however, for a business, there should be a range of cloud options available so the business owner can decide which package would work best for their business needs. At North East Cloud there are a range of cloud solutions, these include:
• Public Cloud Solutions
• Private Cloud Solutions (recommended for businesses)
• Hybrid Cloud Solutions and
• Cloud App solutions.

Generally the private cloud is chosen for businesses; apart from the benefits highlighted above, private cloud allows you to run more applications than your standard Microsoft Office programmes. Further to this you're able to employ staff from almost anywhere; the skills you're looking for in an employee may be based in Australia! The private cloud backup service is ran twice daily so if you lose an important document, don't worry Concept IT will be able to recover it.

Text 3
Now bitcoin malwares target personal computers

NEW DELHI: Bit coin craze is turning into a fertile ground for cyber fraudsters as thousands of computers, including in India, are being infected with malwares related to the virtual currency. The findings of a survey, that has pegged the count of computers infected with bit coin related malware at least 12,000, comes at a time when regulators worldwide have flagged money laundering concerns about this popular virtual currency.

IT security firm Trend Micro, a 'bit coin mining malware' is infecting computers globally leading to increasing threat of cyber security risks for bit coins users.

India is among the countries that have been hit the most by such malwares, it said. As per the survey, four out of the six countries that have the highest number of such infected computers are in the Asia Pacific (APAC) region. Japan was the most affected country with APAC, followed by Australia, India and Taiwan.

"Bit coin users have become the hot target for cyber criminals as bit coin transaction is permanent and has no reversal of charges," Trend Micro Managing Director (India & SAARC) Dhanya Thakkar said.

About 12,000 personal computers have been globally affected by malwares (related to bitcoin) which were causing severe slowdown of computer systems making them "virtual assets for the criminals," it added. "Although bitcoin is claimed to be anonymous, the transaction records are still in public and it leave traces... Consequently, given enough circumstantial evidence, criminals can identify and obtain the owners personal information," Trend Micro said.

Thakkar noted that there is no regulator or authority that bitcoin users can appeal to if they fall victim to theft or fraud. Going by estimates, as many as 67 digital currencies are in circulation on the Internet and their total value is around USD 13 billion. Out of this amount, bitcoin alone accounts for over USD 9 billion.

Text 4
Some Common Problems When We Use Our Android Tablet PC

Android tablet PCs are popular and widely use in our daily life, you will find they appear everywhere, and every owners love their Android tablet PC. We can see that they are different in the sizes, weights, colors, prices, and some function, we may choose an Android tablet PC according to these factors, one point or more points we may consider.

Android tablet PC is the life partner for us, it is very convenient and easy to carry for everyone, some kinds of Android tablet PCs can also be used as a mobile phone, because the owner can use this kind of Android tablet PC take calls, send message, in short, we can think of this Android tablet PC as a big mobile phone, even some think this kind of Android tablet PC is too big for them to hold it with one hand, and it is not convenient for them, there are more owner think Android tablet PC is a good mobile device, they can use it to watch movies and videos in a big screen than a mobile phone has, a big screen not only can give them a good listening and viewing experience., but also can play lots of funny games that their cell phone does not have, a big screen can let them play game better than play game in their smart phone with a small screen. In a word, there are more and more people will buy an Android tablet PC, even they have a personal computer and cell phone.

When we use our Android tablet PC, there are some things we may drive us crazy, particularly when we want to play or use it eagerly or when we were almost finishing with our work .these problems including we cannot turn on our Android tablet PC or we experiences a few crashes in our Android tablet PC.

When we cannot turn on our Android tablet PC, you can check if the battery is dying. You can press the power button to see whether the indicator is on or not. Or you can continuous charging the battery for more than three hours and then starting up your Android tablet PC. When we experiences a few crashes in our Android tablet PC, you can select remove the software you don't use as often or press reset button and then starting up.

Text 5
Multitasking

In computing, multitasking is a concept of performing multiple tasks (also known as processes) over a certain period of time by executing them concurrently. New tasks start and interrupt already started ones before they have reached completion, instead of executing the tasks sequentially so each started task needs to reach its end before a new one is started. As a result, a computer executes segments of multiple tasks in an interleaved manner, while the tasks share common processing resources such as central processing units (CPUs) and main memory.

Multitasking does not necessarily mean that multiple tasks are executing at exactly the same time. In other words, multitasking does not imply parallel execution, but it does mean that more than one task can be part-way through execution at the same time, and that more than one task is advancing over a given period of time. Even on multiprocessor or multicore computers, which have multiple CPUs/cores so more than one task can be executed at once (physically, one per CPU or core), multitasking allows many more tasks to be run than there are CPUs.

In the case of a computer with a single CPU, only one task is said to be running at any point in time, meaning that the CPU is actively executing instructions for that task. Multitasking solves the problem by scheduling which task may be the one running at any given time, and when another waiting task gets a turn. The act of reassigning a CPU from one task to another one is called a context switch; the illusion of parallelism is achieved when context switches occur frequently enough. Operating systems may adopt one of many different scheduling strategies, which generally fall into the following categories:

• In multiprogramming systems, the running task keeps running until it performs an operation that requires waiting for an external event (e.g. reading from a tape) or until the computer's scheduler forcibly swaps the running task out of the CPU.

• In time-sharing systems, the running task is required to relinquish the CPU, either voluntarily or by an external event such as a hardware interrupt. Time

sharing systems are designed to allow several programs to execute apparently simultaneously.

• In real-time systems, some waiting tasks are guaranteed to be given the CPU when an external event occurs. Real time systems are designed to control mechanical devices such as industrial robots, which require timely processing.

Personnel Management

Text 1

Management plays a key role in the development of the Business enterprise. It means getting any work done by other people. Management system has some core functionalities such as planning organizing, staffing and controlling the efforts of human beings who are working in the concerned in the enterprise.

Management basically deals with all the persons working in the concern who are responsible for managing an organization. Everyone in the organization will have certain responsibilities and duties in the enterprise. Personnel management includes planning and directing the applications, development and utilization of human resource in the enterprise. Employees, unions, public relationship also plays a key role in personnel management. So there is a need for personnel Management and planning of the members play a vital role in the Enterprise.

Personnel Management is an important branch in Management of any business enterprise. It holds a key to all actions and successful management. It is also concerned with human and social implications of change in internal organization and methods of working and of economic and social changes in the community. The main aim is to establish a better coordination between all the members from top level management to down below the subordinates to have better cooperation, better focus to bring out innovative ideas, their objectives, understanding in the enterprise. Co-operative relationship is achieved within the enterprise by creating harmonious relations, genuine consultation and participation and system of effective communication.

Personnel management should designed in such a way it will have the capability to respond to the changes. Maintain a good relationship within the organization; meet the enterprise social and legal responsibilities. Human relations have to be nurtured constantly in the enterprise. Only the enterprise, which is conscious of this need, can achieve their targets by efficiently handling their available resources for a particular process.

The objectives of personnel management in any working organization are, to bring development of individuals, maintain a safe and effective environmental conditions, utilize the available resources, to ensure job satisfaction among workers.

Text 2
Career Planning Assistance by Human Resources Department

Career planning is the process of one's life work and involves evaluating abilities and interests, considering alternative career opportunities, establishing career goals, and planning practical development. Career planning is a deliberate process through which a person becomes aware of personal career related attributes and the lifelong sense of stages that contribute to his or her career fulfillment.

The major focus of career planning is on assisting the employees achieve a better match between personal goals and the opportunities that are realistically available in the organization. Career programmers should not concentrate only on career growth opportunities. Practically speaking, there may not be enough high level positions to make upward mobility a reality for a large number of employees. Hence, career-planning efforts need to pin-point and highlight those areas that offer psychological success instead of vertical growth.

Career planning is not an event or end in itself, but a continuous process of developing human resources for achieving optimum results. It must, however, be noted that individual and organizational careers are not separate and distinct. A person who is not able to translate his career plan into action within the organization may probably quit the job, if he has a choice. Organizations, therefore, should help employees in career planning so that both can satisfy each other's needs.

Need for Career Planning

Every employee has a desire to grow and scale new heights in his workplace continuously. If there are enough opportunities, he can pursue his career goals and exploit his potential fully. He feels highly motivated when the organization shows him a clear path as to how he can meet his personal ambitions while trying to realize corporate goals.

Unfortunately, as pointed out by John Leach, organizations do not pay adequate attention to this aspect in actual practice for a variety of reasons. The demands of employees are not matched with organizational needs; no effort is made to show how the employees can grow within certain limits, what happens to an employee five years down the line if he does well, whether the organization is trying to offer mere jobs or long-lasting careers, etc. When recognition does not come in time for meritorious performance and a certain amount of confusion prevails in the minds of employees whether they are 'in' with a chance to grow or not, they look for greener pastures outside.

Text 3
Career Planning Process

The career planning process involves the following steps:

1.   Identifying individual needs and aspirations: Most individuals do not have a clear cut idea about their career aspirations, anchors and goals. The human resource professionals must, therefore, help an employee by providing as much information as possible showing what kind of work would suit the employee most, taking his skills, experience, and aptitude into account. Such assistance is extended through workshops/seminars while the employees are subjected to psychological testing, simulation exercises, etc. The basic purpose of such an exercise is to help an employee form a clear view about what he should do to build his career within the company. Workshops and seminars increase employee interest by showing the value of career planning.

2.   Analyzing career opportunities: Once career needs and aspirations of employees are known, the organization has to provide career paths for each position. Career paths show career progression possibilities clearly. They indicate the various positions that one could hold over a period of time, if one is able to perform well. Career paths change over time, of course, in tune with employee's needs and organizational requirements. While outlining career paths, the claims of experienced persons lacking professional degrees and that of young recruits with excellent degrees but without experience need to be balanced properly.

3.   Aligning needs and opportunities: After employees have identified their needs and have realized the existence of career opportunities the remaining problem is one of alignment. This process consists of two steps: first, identify the potential of employees and then undertake career development programmers (discussed later on elaborately) with a view to align employee needs and organizational opportunities. Through performance appraisal, the potential of employees can be assessed to some extent. Such an appraisal would help reveal employees who need further training, employees who can take up added responsibilities, etc.

4.   Action plans and periodic review: The matching process would uncover gaps. These need to be bridged through individual career development efforts and organization supported efforts from time to time. After initiating these steps, it is necessary to review the whole thing every now and then. This will help the employee know in which direction he is moving, what changes are likely to take place, what kind of skills are needed to face new and emerging organizational challenges. From an organizational standpoint also, it is necessary to find out how employees are doing, what are their goals and aspirations, whether the career paths are in tune with individual needs and serve the overall corporate objectives, etc.

Text 4
Career Planning Assistance by HR Department

A career is not something that should be left to each employee; instead it should be managed by the organization to ensure efficient allocation of human and capital resources. The HR department must take an active role in employee career planning through career education, information and counseling:

Career Education

Many employees know very little about career planning. Often they are unaware of the need for and advantages of career planning. And once made aware, they often lack the necessary information to plan their careers successfully. Personnel departments are suited to solve both of these shortcomings, and they can increase employee awareness through a variety of educational techniques. Workshops and seminars on career planning increase employee interest by pointing out the key concepts associated with career planning. Workshops help the employees set career goals, identify career paths, and uncover specific career development activities. These educational activities may be supplemented by

printed information. The goals of career information seminar is to help employees better understand hoe their jobs and careers can contribute to their goals and to identify the roles of employees, their supervisors, and the personnel department in career planning and personal development.

Law and Watts (1977) devised a simple model of career education which has stood the test of time. This model has been changed slightly to become a career planning, rather than a career education model and named the SODI model where the last element is 'implementation' rather than 'transition learning', and 'decision learning' becomes 'decision making and planning'. The SODI model encapsulates four concepts which are:

1. Self-awareness – Individual having knowledge about and understanding of their own personal development. Self-awareness in a careers context involves an understanding of kind of personal resources (both actual and potential) they bring to world.

2. Opportunity awareness – An understanding of the general structures of the world of work, including career possibilities and alternative pathways.

3. Decision making and planning – An understanding of how to make career decisions, and being aware of pressures, influences, styles, consequences and goal setting.

4. Implementing plans – Having the appropriate skill level in a range of areas to be able to translate job and career planning into reality.

Text 5
Leadership Styles in Management

A leader is a person who influences a group of people towards the achievement of a goal while leadership is the art of motivating a group of people to act towards achieving a common goal. Different leadership styles will result in different impact to organization. The leader has to choose the most effective approach of leadership style depending on situation because leadership style is crucial for a team success. By understanding these leadership styles and their impact, everyone can become a more flexible and better leader.

1. Transactional Leadership

This style of leadership starts with the premise that team members agree to obey their leader totally when they take a job on. Transactional leadership is really just a way of managing rather a true leadership style, as the focus is on short-term tasks. It has serious limitations for knowledge-based or creative work, but remains a common style in many organizations.

2. Autocratic Leadership

Under the autocratic leadership styles, all decision-making powers are centralized in the leader as shown such leaders are dictators. Autocratic leadership is an extreme form of transactional leadership, where a leader exerts high levels of power over his or her employees or team members. People within the team are

given few opportunities for making suggestions, even if these would be in the team's or organization's interest.

3. Transformational Leadership

Transformational leadership is a leadership style that is defined as leadership that creates valuable and positive change in the followers. A transformational leader focuses on "transforming" others to help each other, to look out for each other, to be encouraging and harmonious, and to look out for the organization as a whole. In this leadership, the leader enhances the motivation, morale and performance of his follower group.

4. Servant Leadership

This term describes a leader who is often not formally recognized as such. When someone, at any level within an organization, leads simply by virtue of meeting the needs of his or her team, he or she is described as a "servant leader". Servant Leadership's focus was on the leader as a servant, with his or her key role being in developing, enabling and supporting team members, helping them fully develop their potential and deliver their best.

5. Charismatic Leadership

The Charismatic Leader can tend to believe more in themselves than in their teams.

6. Democratic Leadership or Participative Leadership

Although a democratic leader will make the final decision, he or she invites other members of the team to contribute to the decision-making process.

7. Laissez-Faire Leadership

The laissez-faire leadership style is also known as the "hands-off" style. It is one in which the manager provides little or no direction and gives employees as much freedom as possible. All authority or power is given to the employees and they must determine goals, make decisions, and resolve problems on their own.

8. Bureaucratic Leadership

Bureaucratic leaders attempt to solve problems by adding layers of control, and their power comes from controlling the flow of information. Bureaucratic leaders work "by the book", ensuring that their staff follow procedures exactly.

Economics

Text 1
Unemployment, Growth, and the Future

In the depths of the Great Depression of the 1930s, one quarter of U.S. workers were unemployed and one-third of U.S. production capacity was idle. The United States has suffered a number of considerably milder downturns since then, one occurring in 2001. In that year total production fell one-half a percentage point and unemployment increased by about 2 million workers.

Almost all nations have experienced widespread unemployment and unused production capacity from business downturns at one time or another. Since 1995, for example, several nations—including Argentina, Japan, Mexico, Germany, and South Korea—have had economic downturns and unemployment. How do these realities relate to the production possibilities model? Our analysis and conclusions change if we relax the assumption that all available resources are fully employed.

A Growing Economy

When we drop the assumptions that the quantity and quality of resources and technology are fixed, the production possibilities curve shifts positions and the potential maximum output of the economy changes. Increases in Resource Supplies Although resource supplies are fixed at any specific moment, they change over time. For example, a nation's growing population brings about increases in the supplies of labor and entrepreneurial ability. Also, labor quality usually improves over time via more education and training. Historically, the economy's stock of capital has increased at a significant, though unsteady, rate. And although some of our energy and mineral resources are being depleted, new sources are also being discovered. The development of irrigation programs, for example, adds to the supply of arable land.

The net result of these increased supplies of the factors of production is the ability to produce more of both consumer goods and capital goods. Thus, 20 years from now, the production possibilities may supersede those shown in shift represents growth of economic capacity, which, when used, means economic growth : a larger total output.

Text 2
Economic Systems

Every society needs to develop an **economic system** – a particular set of institutional arrangements and a coordinating mechanism – to respond to the economizing problem.

The economic system has to determine what goods are produced, how they are produced, who gets them, how to accommodate change, and how to promote technological progress.

Economic systems differ as to (1) who owns the factors of production and (2) the method used to motivate, coordinate, and direct economic activity. Economic systems have two polar extremes: the command system and the market system.

The Command System

The **command system** is also known as *socialism* or *communism*. In that system, government owns most property resources and economic decision making occurs through a central economic plan. A central planning board appointed by the government makes nearly all the major decisions concerning the use of resources, the composition and distribution of output, and the organization of production. The government owns most of the business firms, which produce according to government directives. The central planning board determines production goals for each enterprise and specifies the amount of resources to be allocated to each enterprise so that it can reach its production goals. The division of output between capital and consumer goods is centrally decided, and capital goods are allocated among industries on the basis of the central planning board's long-term priorities.

A pure command economy would rely exclusively on a central plan to allocate the government-owned property resources. But, in reality, even the preeminent command economy– the Soviet Union– tolerated some private ownership and incorporated some markets before its collapse in 1992. Recent reforms in Russia and most of the eastern European nations have to one degree or another transformed their command economies to capitalistic, marketoriented systems.

China's reforms have not gone as far, but they have greatly reduced the reliance on central planning. Although government ownership of resources and capital in China is still extensive, the nation has increasingly relied on free markets to organize and coordinate its economy. North Korea and Cuba are the last prominent remaining examples of largely centrally planned economies. Other countries using mainly the command system include Turkmenistan, Laos, Belarus, Libya, Myanmar, and Iran.

The Market System

The polar alternative to the command system is the **market system,** or *capitalism*. The system is characterized by the private ownership of resources and the use of markets and prices to coordinate and direct economic activity. Participants act in their own self-interest. Individuals and businesses seek to achieve their economic goals through their own decisions regarding work, consumption, or production. The system allows for the private ownership of capital, communicates through prices, and coordinates economic activity through *markets*—places where buyers and sellers come together. Goods and services are produced and resources are supplied by whoever is willing and able to do so. The result is competition among independently acting buyers and sellers of each product and resource.

Thus, economic decision making is widely dispersed. Also, the high potential monetary rewards create powerful incentives for existing firms to innovate and entrepreneurs to pioneer new products and processes.

In *pure* capitalism government's role would be limited to protecting private property and establishing an environment appropriate to the operation of the market system.

But in the capitalism practiced in the United States and most other countries, government plays a substantial role in the economy. It not only provides the rules for economic activity but also promotes economic stability and growth, provides certain goods and services that would otherwise be underproduced or not produced at all, and modifies the distribution of income. The government, however, is not the dominant economic force in deciding what to produce, how to produce it, and who will get it. That force is the market.

Characteristics of the Market System

An examination of some of the key features of the market system in detail will be very instructive.

Private Property

In a market system, private individuals and firms, not the government, own most of the property resources (land and capital). It is this extensive private ownership of capital that gives capitalism its name. The right of **private property,** coupled with the freedom to negotiate binding legal contracts, enables individuals and businesses to obtain, use, and dispose of property resources as they see fit. The right of property owners to designate who will receive their property when they die helps sustain the institution of private property.

Property rights encourage investment, innovation, exchange, maintenance of property, and economic growth. Nobody would stock a store, build a factory, or clear land

for farming if someone else, or the government itself, could take that property for his or her own benefit. Property rights also extend to intellectual property through patents, copyrights, and trademarks. Such longterm protection encourages people to write books, music, and computer programs and to invent new products and production processes without fear that others will steal them and the rewards they may bring.

Moreover, property rights facilitate exchange. The title to an automobile or the deed to a cattle ranch assures the buyer that the seller is the legitimate owner. Also, property rights encourage owners to maintain or improve their property so as to preserve or increase its value. Finally, property rights enable people to use their time and resources to produce more goods and services, rather than using them to protect and retain the property they have already produced or acquired.

Freedom of Enterprise and Choice

Closely related to private ownership of property is freedom of enterprise and choice. The market system requires that various economic units make certain choices, which are expressed and implemented in the economy's markets:

• **Freedom of enterprise** ensures that entrepreneurs and private businesses are free to obtain and use economic resources to produce their choice of goods and services and to sell them in their chosen markets.

• **Freedom of choice** enables owners to employ or dispose of their property and money as they see fit. It also allows workers to try to enter any line of work for which they are qualified. Finally, it ensures that consumers are free to buy the goods and services that best satisfy their wants and that their budgets allow. These choices are free only within broad legal limitations, of course. Illegal choices such as selling human organs or buying illicit drugs are punished through fines and imprisonment. (Global Perspective 2.1 reveals that the degree of economic freedom varies greatly from economy to economy.)

Self-Interest

In the market system, **self-interest** is the motivating force of the various economic units as they express their free choices. Self-interest simply means that each economic unit tries to achieve its own particular goal, which usually requires delivering something of value to others. Entrepreneurs try to maximize profit or minimize loss. Property owners try to get the highest price for the sale or rent of their resources. Workers try to maximize their utility (satisfaction) by finding jobs that offer the best combination of wages, hours, fringe benefits, and working conditions.

Text 3
World Trade Organization

The Uruguay Round agreement established the World Trade Organization (WTO) as GATT's successor. Some 153 nations belonged to the WTO in 2008. The WTO oversees trade agreements reached by the member nations and rules on trade disputes among them. It also provides forums for further rounds of trade negotiations. The ninth and latest round of negotiations—the Doha Round—was launched in Doha, Qatar, in late 2001. (The trade rounds occur over several years in several venues but are named after the city or country of origination.) The negotiations are aimed at further reducing tariffs and quotas, as well as agricultural subsidies that distort trade.

The trade rules agreed upon by the member nations provide a strong and necessary bulwark against the protectionism called for by the special-interest groups in the various nations. For that reason and others, the WTO is controversial.

Critics are concerned that rules crafted to expand international trade and investment enable firms to circumvent national laws that protect workers and the environment. What good are minimum-wage laws, worker safety laws, collective bargaining rights, and environmental laws if firms can easily shift their production to nations that have weaker laws or consumers can buy goods produced in those countries?

Proponents of the WTO respond that labor and environmental protections should be pursued directly in nations that have low standards and via international

organizations other than the WTO. These issues should not be linked to the process of trade liberalization, which confers widespread economic benefits across nations. Moreover, say proponents of the WTO, many environmental and labor concerns are greatly overblown. Most world trade is among advanced industrial countries, not between them and countries that have lower environmental and labor standards. Moreover, the free flow of goods and resources raises output and income in the developing nations. Historically, such increases in living standards have eventually resulted in stronger, not weaker, protections for the environment and for workers.

The European Union

Countries have also sought to reduce tariffs by creating regional *free-trade zones*—also called *trade blocs.* The most dramatic example is the **European Union (EU),** formerly called the European Economic Community. Initiated in 1958 as the Common Market, in 2003 the EU comprised 15 European nations—France, Germany, United Kingdom, Italy, Belgium, the Netherlands, Luxembourg, Denmark, Ireland, Greece, Spain, Portugal, Austria, Finland, and Sweden. In 2004, the EU expanded by 10 additional
European countries—Poland, Hungary, Czech Republic, Slovakia, Lithuania, Latvia, Estonia, Slovenia, Malta, and Cyprus. In 2007, the addition of Bulgaria and Romania expanded the EU to 27 nations.

The EU Trade Bloc

The EU has abolished tariffs and import quotas on nearly all products traded among the participating nations and established a common system of tariffs applicable to all goods received from nations outside the EU. It has also liberalized the movement of capital and labor within the EU and has created common policies in other economic matters of joint concern such as agriculture, transportation, and business practices. The EU is now a strong **trade bloc:** a group of countries having common identity, economic interests, and trade rules.

EU integration has achieved for Europe what the U.S. constitutional prohibition on tariffs by individual states has achieved for the United States: increased regional specialization, greater productivity, greater output, and faster economic growth. The free flow of goods and services has created large markets for EU industries.

The resulting economies of large-scale production have enabled these industries to achieve much lower costs than they could have achieved in their small, single-nation markets.

The effects of EU success on nonmember nations such as the United States have been mixed. A peaceful and increasingly prosperous EU makes its members better customers for U.S. exports. But U.S. firms and other nonmember firms have been faced with tariffs and other barriers that make it difficult for them to compete against firms within the EU trade bloc. For example, autos produced in Germany and sold in Spain or France face no tariffs, whereas U.S. and Japanese autos exported to EU countries do. This puts U.S. and Japanese firms at a serious disadvantage. By giving preferences to countries within their freetrade zone, trade

blocs such as the EU tend to reduce their members' trade with non-bloc members. Thus, the world loses some of the benefits of a completely open global trading system. Eliminating that disadvantage has been one of the motivations for liberalizing global trade through the World Trade Organization. Those liberalizations apply equally to all nations that belong to the WTO.

The Euro

One of the most significant accomplishments of the EU was the establishment of the so-called Euro Zone in the early 2000s. In 2008, 15 members of the EU used the **euro** as a common currency. Great Britain, Denmark, and Sweden have opted out of the common currency, at least for now. But gone are French francs, German marks, Italian liras, and other national currencies within the Euro Zone.

Economists expect the adoption of the euro to raise the standard of living of the Euro Zone members over time. By ending the inconvenience and expense of exchanging currencies, the euro has enhanced the free flow of goods, services, and resources among the Euro Zone members. International trade among the member nations has increased by roughly 10 percent, with much of that increase happening because companies that previously sold products in only one or two European countries have now found it easier to market and sell their wares in all 15 Euro Zone countries. The euro has also allowed consumers and businesses to comparison shop for outputs and inputs, and this capability has increased competition, reduced prices, and lowered costs.

Text 4
Monopolistic Competition

Monopolistic competition is characterized by (1) a relatively large number of sellers, (2) differentiated products (often promoted by heavy advertising), and (3) easy entry to, and exit from, the industry. The first and third characteristics provide the "competitive" aspect of monopolistic competition; the second characteristic provides the "monopolistic" aspect. In general, however, monopolistically competitive industries are much more competitive than they are monopolistic.

1.Relatively Large Number of Sellers

Monopolistic competition is characterized by a fairly large number of firms, say, 25, 35, 60, or 70, not by the hundreds or thousands of firms in pure competition. Consequently, monopolistic competition involves:

• Small market shares Each firm has a comparatively small percentage of the total market and consequently has limited control over market price.

• No collusion The presence of a relatively large number of firms ensures that collusion by a group of firms to restrict output and set prices is unlikely.

• Independent action With numerous firms in an industry, there is no feeling of interdependence among them; each firm can determine its own pricing policy without considering the possible reactions of rival firms. A single firm may realize a modest increase in sales by cutting its price, but the effect of that action on

competitors' sales will be nearly imperceptible and will probably trigger no response.

2. Differentiated Products

In contrast to pure competition, in which there is a standardized product, monopolistic competition is distinguished by product differentiation. Monopolistically competitive firms turn out variations of a particular product. They produce products with slightly different physical characteristics, offer varying degrees of customer service, provide varying amounts of locational convenience, or proclaim special qualities, real or imagined, for their products. Let's examine these aspects of product differentiation in more detail.

Product Attributes Product differentiation may entail physical or qualitative differences in the products themselves. Real differences in functional features, materials, design, and workmanship are vital aspects of product differentiation. Personal computers, for example, differ in terms of storage capacity, speed, graphic displays, and included software. There are dozens of competing principles of economics textbooks that differ in content, organization, presentation and readability, pedagogical aids, and graphics and design. Most cities have a variety of retail stores selling men's and women's clothes that differ greatly in styling, materials, and quality of work. Similarly, one pizza place may feature its thin-crust Neapolitan style pizza, while another may tout its thick-crust pizza.

Service Service and the conditions surrounding the sale of a product are forms of product differentiation too. One shoe store may stress the fashion knowledge and helpfulness of its clerks. A competitor may leave trying on shoes and carrying them to the register to its customers but feature lower prices. Customers may prefer one-day over three-day dry cleaning of equal quality. The prestige appeal of a store, the courteousness and helpfulness of clerks, the firm's reputation for servicing or exchanging its products, and the credit it makes available are all service aspects of product differentiation.

Location Products may also be differentiated through the location and accessibility of the stores that sell them. Small convenience stores manage to compete with large supermarkets, even though these minimarts have a more limited range of products and charge higher prices. They compete mainly on the basis of location—being close to customers and situated on busy streets. A motel's proximity to an interstate highway gives it a locational advantage that may enable it to charge a higher room rate than nearby motels in less convenient locations.

Brand Names and Packaging Product differentiation may also be created through the use of brand names and trademarks, packaging, and celebrity connections. Most aspirin tablets are very much alike, but many headache sufferers believe that one brand—for example, Bayer, Anacin, or Bufferin—is superior and worth a higher price than a generic substitute. A celebrity's name associated with watches, perfume, or athletic shoes may enhance the appeal of those products for some buyers. Many customers prefer one style of ballpoint pen to another. Packaging that touts "natural spring" bottled water may attract additional customers.

Text 5
Role of Entrepreneurs and Other Innovators

It will be helpful to distinguish between "entrepreneurs" and "other innovators":

• **Entrepreneurs** Recall that the entrepreneur is an initiator, innovator, and risk bearer—the resource that combines land, labor, and capital resources in new and unique ways to produce new goods and services.

In the past a single individual, for example, Andrew Carnegie in steel, Henry Ford in automobiles, or Levi Strauss in blue jeans, carried out the entrepreneurial role. Such advances as air conditioning, the ballpoint pen, cellophane, the jet engine, insulin, xerography, and the helicopter all have an individualistic heritage. But in today's more technologically complex economy, entrepreneurship is just as likely to be carried out by entrepreneurial teams. Such teams may include only two or three people working "as their own bosses" on some new product idea or it may consist of larger groups of entrepreneurs who have pooled their financial resources.

• **Other innovators** This designation includes other key people involved in the pursuit of innovation who do not bear personal financial risk. Among them are key executives, scientists, and other salaried employees engaged in commercial R&D activities. (They are sometimes referred to as *intrapreneurs* since they provide the spirit of entrepreneurship within existing firms.)

Forming Start-Ups Entrepreneurs often form small new companies called startups that focus on creating and introducing a new product or employing a new production or distribution technique. Two people, working out of their garages, formed such a start-up in the mid-1970s. Since neither of their employers—Hewlett- Packard and Atari, the developer of Pong (the first video game)—was interested in their prototype personal computer, they founded their own computer company: Apple.

Other examples of successful start-ups are Amgen, a biotechnology firm specializing in new medical treatments; Starbucks, a seller of gourmet coffee; Amazon, an Internet retailer; and Google, an Internet search provider.

Innovating within Existing Firms

Innovators are also at work within existing corporations, large and small. Such innovators are salaried workers, although many firms have pay systems that provide them with substantial bonuses or profit shares. Examples of firms known for their skillful internal innovators are 3M Corporation, the U.S. developer of Scotch tape, Post-it Note Pads, and Thinsulate insulation; and General Electric, the developer of innovative major kitchen appliances, medical imaging machines, and jet aircraft engines. R&D work in major corporations has produced significant technological improvements in such products as television sets, telephones, home appliances, automobiles, automobile tires, and sporting equipment. Some large firms, aware that excessive bureaucracy can stifle creative thinking and technological advance, have separated part of their R&D and manufacturing

divisions to form new, more flexible, innovative firms. Three significant examples of such "spin-off firms" are Lucent Technologies, a telephone equipment and R&D firm created by AT&T; Imation, a high-technology firm spun off by the 3M Corporation; and Yum Brands, which operates restaurant chains Taco Bell, KFC, and Pizza Hut, spun off from Pepsi.

Text 6
Sources of finance

For the well-established firm, the most obvious source of finance is its own profits. Instead of paying out all its profits to its shareholders, the firm can retain some within the business. Using retained profits in the business is described as "ploughing back the profits". It is an important source of finance for a larger firm.

In the case of a very small firm, the necessary money will be provided by the proprietor and his family and friends with, perhaps, a loan from local bank.

Loans can be short-term and long-term ones. Short-term loans are usually repayable within three years. Many such loans are for periods of one year or less. The sources of loan are as follows:
- overdrafts
- bills of exchange
- trade credits
- hire purchases
- leasing

A bank overdraft is the most widely used type of short-term finance. The bank allows the company to overdraw its account by some agreed amount. Interest is charged by the bank only on the amount overdrawn. It is one of the cheaper forms of borrowing.

Bills of exchange enable the company to obtain short-term finance from a bank or discount house where they send bills of exchange for discounting. Trade credits are quite normal in business. They are often granted by the sellers allowing the buyers to pay in some time, say in three months. A firm may acquire some equipment such as cars, lorries, office equipment and some type of machinery on hire-purchase terms. It makes a deposit and pays the outstanding amount by installment over two or three years. Ownership passes to the buyer when the installment is paid.

Text 7
Marketing

Companies undertake international marketing for a variety of reasons. Some are pushed by poor opportunities in the domestic market, and some are pulled by attractive opportunities abroad. Given the risk of international marketing, companies need a systematic way to make their international marketing decisions.

The first step is to understand the international marketing environment, particularly the international trade system. In considering a particular foreign market, its economic, political, legal and cultural characteristics must be assessed. Second, the company must consider what proportion of foreign to total sales it will seek, whether it will do business in a few or many countries, and what types of country it wants to market in. The third step is to decide which particular markets to enter, and this calls for evaluating the probable rate of return on investment against the level of risk. Fourth, the company has to decide how to enter attractive market, whether through exporting, joint venturing or direct investment.

Many companies start as exporters, move to joint venturing, and finally undertake direct investments. Companies must decide on the extent to which their products, promotion, price and contribution should be adapted to each foreign market.

Finally, the company must develop an effective organization for pursuing international marketing. Most firms start with an export department and graduate to an international division. A few pass to a multinational organization, which means that worldwide marketing is planned and managed by the top officers of the company.

Text 8
Accounting

If one wants to the financial picture of a company, one has to deal with accounting, the latter being the best way of analysing the business activities of the company. It is the accounting department that keeps the necessary records and gives an assessment to the business activities of the company. The department systematically reports on the financial results of the deals struck and their impact on the company's financial condition.

Accounting records offer very significant information which is used by banks and governmental offices, stockholders and creditors, managers, and independent analysts.

In most cases business organizations prepare two kinds of records: income statement and balance sheet. These documents show how money was obtained and used by the company.

The analysis of accounting record is carried out with the help of a ratio analysis. A ratio analysis is the relationship of two figures. In finance we operate with three main categories of ratios. One of them deals with profitability. It is used as a measure of a company's operating efficiency.

The other group of ratios treats of assets and liabilities. It helps a company to assess its current financial situation. The third group of ratios has to do with the overall financial structure of the company. It give a profound analysis of the property value of the company.

Text 9

Economy in its progress

There are different economic changes affecting our life. When demand increases and supply is not sufficient, we always have shortages of goods, and labor is in great demand. Otherwise the economy is seen as approaching an economic crisis. Economists have developed a system of indicators which help to measure and assess a country's economy. It consists of four elements. Each of them is a phase in the cycle characterized by its own peculiarities.

And Peak time. During peak time economy is doing very well. People are working hard and are getting high wages. Goods are being delivered to the stores on time and in efficient quantities. Consumers are spending their money buying all sorts of things. Firms are making profit, banks are giving loans to people who are setting up small businesses, and service are being provided everywhere and at low prices.

Recession. But, as history shows, after a peak period there usually comes a downward turn into a recession. Sales are decreasing. Business firms are cutting down their activities. Fewer things are being produced and more workers are laid off. Not only the business firms are cutting down their work, but also their suppliers: they produce less, and lay off their workers. Consumers are spending less, the business declines even more.

Trough. Usually all recession sooner or later reach a bottom (i.e. the trough of the cycle), and then start changing for the better. Customers start buying more, and the economic situation is beginning to improve.

Recovery. It is an increase in business activity which results in increasing employment, greater consumer spending, more intensive cash-flow, and the beginning of another round of a business cycle.

Text 10
Interest rates

The Bank's influence on short term interest rates arises from its role in the domestic money markets. As bankers to the government and to the banks, the Bank is able to forecast fairly accurately the pattern of flows between the government's accounts on the one hand, and by commercial banks on the other, and acts on a daily basis to smooth out the imbalances which arise. When more money flows from the bank to the government than vice versa, the bank's holdings of liquid assets are run down and the money market finds itself short of funds. When more money flows the other way, the market can be in cash surplus, but the pattern of government and bank operations usually results in a shortage of cash in the market each day – a shortage which the Bank then relieves. Because the Bank is thus, on a day – to – day basis, the final provider of liquidity to the system, it can choose the interest rate at which it will provide funds each day.

Rather than deal directly with every individual bank, the Banks uses the discount houses as an intermediary. These are highly-specialized dealers who hold

large stocks of commercial bills and with whom the major banks place their surplus cash. The discount houses have borrowing facilities at the Bank. The Bank may provide cash either by purchasing securities from the houses, or by lending to them direct. The rates at which the Bank deals with the discount houses are quickly passed on through the financial system, influencing interest rates for the whole economy.

When the Bank changes its dealing rate, the commercial banks promptly change their own base rates from which deposit and lending rates are calculated.

Finance

Text 1
Gold Keeps Shining, 40 Years After Nixon Ended Gold Standard

The best example of something is often called the "gold standard." It sets the standard against which other things are measured. In economics, the term describes how major trading nations once used gold to set currency values and exchange rates.

 Many nations continued to use the gold standard until the last century. In the United States, people could exchange paper money for gold from the eighteen seventies until nineteen thirty-three. President Richard Nixon finally disconnected the dollar from the value of gold in nineteen seventy-one. Some politicians from time to time call for a return to the gold standard. But in nineteen seventy-eight the International Monetary Fund ended an official gold price. The IMF also ended the required use of gold in transactions with its member countries.

Since that time, gold prices have grown, but unevenly. Prices – uncorrected for inflation – have hit record highs recently above fourteen hundred dollars an ounce. But people keep buying. Neang Chan Nuon is a gold shop owner in the Cambodian capital, Phnom Penh, and says: "Some of my customers have even bought more as they believe the price will probably go higher. I sell more gold at these higher prices." Some people are "gold bugs." These are investors who say people should buy gold to protect against inflation.

People have valued gold for thousands of years. The soft, dense metal polishes to a bright yellow shine and resists most chemical reactions. It makes a good material for money, political power – and, more recently, electrical power. If you own a device like a mobile phone or a computer, you might own a little gold in the wiring.

The gold standard was the subject of one of the best-known speeches in American political history. It took place at the eighteen ninety-six Democratic National Convention in Chicago. William Jennings Bryan wanted the country to use both gold and silver as money. The idea was to devalue the dollar and make it easier for farmers to pay their debts. Bryan said: "You shall not press down upon the brow of labor this crown of thorns. You shall not crucify mankind upon a cross of gold." The speech made William Jennings Bryan famous. He was a presidential candidate three times. But he never won.

VOCABULARY
• gold standard – золотой стандарт – денежная система, при которой национальные денежные единицы имеют установленное законом золотое содержание и подлежат свободному размену на золото. Впервые был введен в 1717 г. по инициативе Исаака Ньютона, с 1834 г. стал применяться в США, а остальные крупные страны присоединились к стандарту в 1870-х гг. Действовал до 1933 г.;

- gold bug – «золотой жук» – сторонник идеи сохранения денежных функций золота.

Text 2
Rebalancing the World Economy

In September, the Group of 20 met in Pittsburgh, Pennsylvania. It was the third Group of 20 summit in less than a year. Leaders of the major developed and developing economies discussed ways to fix the world financial system.

In April they had agreed to do everything necessary to prevent a collapse. This time they noted their success, but warned that the "process of recovery and repair remains incomplete."

The presidents and prime ministers launched what they called a Framework for Strong, Sustainable and Balanced Growth. At the same time, they agreed to make the G20 the main group to guide international economic cooperation.

For years that has been a job for the Group of 8: Britain, Canada, France, Germany, Italy, Japan, Russia and the United States.

But the world's economic power structure has changed. The G8 leaves out developing nations with big populations and growing economies like China, India and Brazil.

In Pittsburgh, rich nations agreed to also give up some of their representation in the International Monetary Fund. And they called for more voting power for developing nations in the World Bank.

Ghiyath Nakshbendi is a professor of international business at American University in Washington, D.C. He said the decision to cooperate on economic policy is important, given how much Gross Domestic Product the G20 represents.

He said that when you talk about the G20, you are talking about nineteen countries plus the European Union that produce ninety-five percent of the G.D.P. in the world.

Martin Edwards is an assistant professor at Seton Hall University in New Jersey who has written about the I.M.F. He says increasing the influence of developing nations will increase the standing of the fund and the World Bank. But he notes that having more players at the table could also mean more disputes.

In terms of financial reforms, experts say there is widespread support for some proposals to control risks. But others are unpopular in America and Britain. These include linking the pay of bankers to their bank's long-term performance.

G20 leaders plan to meet next in Canada in June and in South Korea next November. They face many hard choices in the coming months. Professor Nakshbendi says the biggest question is to what extent they are willing to follow their own advice.

Text 3

A Closer Look at High-Frequency Trading

Once, stocks were traded through the open outcry system. Today fast, interconnected computers have mostly replaced the traders shouting prices on the floors of stock exchanges. Joe Saluzzi is a head of equity trading at Themis Trading in New Jersey. "The equity market has changed. It's no longer what you see on TV, it's no longer guys with colored jackets running around the floor anymore. The equity market is a bunch of co-located computers strung together by a bunch of wires, everyone trying to race to zero. The speed of light is the goal."

Computers can process stock trades in thousandths of a second. Andrew Haines of Gain Capital is an online broker. "A millisecond can mean millions of dollars to the success of your strategy. Having a one, two, three millisecond advantage over other traders may mean that you get into a trade at a preferable price."

Andrew Haines says an estimated seventy percent of all stock trades are high-frequency trades made with complex computer models. Stocks may be held for only seconds. But fast trades are also blamed for big moves in stock prices. On May sixth, two thousand ten, a leading measure of American stocks briefly fell about nine percent. The Dow Jones Industrial Average then recovered much of those losses by the end of trading that day. The Securities and Exchange Commission ordered steps to prevent future "flash crashes" like that one.

Joel Hasbrouck of New York University says those steps are working. "They're called circuit-breakers, and basically what they mean is that when a stock has moved by a large amount in a short period of time, there's a trading halt." Joe Saluzzi of Themis Trading says the main problem with high-speed trading is an unbalanced market. "The stock market used to be a predictor of the future economy. Now I think the stock market is a backwards predictor. It's forecasting the next microsecond move. It's not forecasting the next six months, because most of the volume is being dominated by guys who could care less what goes on in six months. So, how could you think the price is being set correctly?" But Joel Hasbrouck says high-speed trading can reduce sharp rises or drops in stock prices. "In normal circumstances, high-frequency traders act as market-makers. That means they stand by passively waiting to buy or sell from whoever comes into the market needing to trade. In that capacity, they actually help stabilize the market."

VOCABULARY
• Dow Jones Industrial Average – индекс промышленных акций Доу-Джонса (экономический показатель, характеризующий кредитно-финансовую ситуацию в мире, включает котировки акций 30 ведущих промышленных корпораций, базовый год – 1928);
• Securities and Exchange Commission – Комиссия по ценным бумагам и биржам [биржевым операциям] (независимое федеральное ведомство, осуществляющее контроль над финансовой отчетностью корпораций и регулирование их деятельности на рынке ценных бумаг;

требует предоставления полной финансовой информации в целях защиты интересов инвесторов, в своей деятельности следует решениям профессиональных бухгалтерских и аудиторских организаций, в основном – Совета по стандартам финансового учета, Комитета по процедурам бухгалтерского учета и Совета по стандартам аудита; создана в 1934 г.).

Text 4
Olympus' Troubles: What Would Peter Drucker Have Said?

In December, the Japanese electronics company Olympus made a public apology. It said company officials hid over one billion dollars in losses going back to the nineteen nineties. Olympus said it was investigating and considering legal action against some of its current and former officials. The company's stock lost half its value between October and December. The problems at Olympus seemed to come from thinking more about declaring profits in the short-term instead of building real value. This was one of the issues considered by management expert Peter Drucker over his long career.

Peter Drucker died in two thousand five. But many of his ideas remain very meaningful today. Drucker liked to share his knowledge not by answering questions but by asking them. He once said business people must not ask "what do we want to sell?" but "what do people want to buy?" He taught at the Claremont Graduate School of Management in California for over thirty years. He advised companies on business methods. And he wrote thirty-nine books on business and economic ideas.

Peter Drucker was born in Austria in nineteen nine. In the late nineteen twenties, he worked as a reporter in Frankfurt, Germany. He also studied international law. He fled Germany as Adolf Hitler came to power in nineteen thirty-three. Drucker spent four years in Britain as an adviser to investment banks. He then came to the United States. In the nineteen forties, Drucker argued that the desire for profit was central to business efforts. He also warned that rising wages were harming American business. He was later invited to study General Motors. He wrote about his experiences in the book "The Concept of the Corporation." In it, he said that workers at all levels should take part in decision-making, not just top managers. Later in his career, he warned that businesses that seek only profit growth help their competitors.

Peter Drucker received the Presidential Medal of Freedom from President George W. Bush in two thousand two. He lived a long life; he died at the age of ninety-five. Drucker was a voice for change and new ways of thinking about social and business relations. He used terms like "knowledge workers" and "management goals." Many of his ideas have become highly valued in business training and politics.

Text 5
Basel Plan Aims to Force Banks to Increase Capital

The financial crisis of two thousand eight brought attention to a big problem with banks. Many banks did not have enough money in reserve to protect against their losses. Now there is a proposed solution. In September, banking supervisors from twenty-six nations and Hong Kong met in Basel, Switzerland. They announced proposals to make banks safer by requiring them to increase their reserves.

The Basel Committee on Banking Supervision has been working on a set of recommendations known as Basel Three. These are based on agreements reached in July by officials from a group of leading industrial nations. The goal is to stop the cycle of easing rules on banks in good times and tightening them only after a crisis. Under the new rules, banks would have to hold reserves equal to seven percent of their risk-weighted assets. Mainly this means loans.

Currently banks are required to hold two percent in reserve. The bigger reserves could be in the form of cash or common stock, also known as common equity. Banks would also have to hold extra reserves as their national economies improve. The new requirements would go into effect starting in January of two thousand thirteen. Banks would have five years to fully meet them.

International banking lawyer Ernie Patrikis, a former vice president of the Federal Reserve Bank of New York, explains why. He says: "We cannot be telling banks, on the one hand, raise capital right away, and on the other hand, lend more." One way for banks to meet the proposed new rules would be to sell more of their stock. That is what Germany's Deutsche Bank did in September. It announced a sale offer valued at over eleven billion dollars.

Ernie Patrikis thinks chief executive officers of banks have three choices. He says: "One is to go out and raise more common equity. Another one is to not pay dividends. And that is not something most CEO's want to do because their shareholders aren't going to be particularly happy.

And the third choice is sell assets — downsize the bank." Nations on the Basel committee will now seek to pass the new rules into law so their banking supervisors can enforce them. Banks that fall below the reserve limits could have to stop paying dividends to shareholders or bonuses to top employees. Ending dividends would anger shareholders. And limiting pay could send bankers fleeing to hedge funds, where there are fewer rules.

VOCABULARY
• Basel Committee on Banking Supervision – Базельский комитет банковского надзора (или по банковскому надзору) – орган созданный в 1974 г. странами Группы десяти в рамках Банка международных расчетов для разработки норм прудециального банковского надзора и обобщения наилучшего международного опыта в этой области, который может учитываться денежными властями стран при разработке национальных стандартов банковского надзора и регулирования;
• risk-weighted assets – активы, взвешенные по риску – стоимость активов, которая рассчитана путем группировки активов в несколько

классов, соответствующих разным оценочным уровням риска, и умножения стоимости активов из каждого класса на коэффициент, отражающий уровень риска.

Text 6
Greece's Debt Crisis and the Future of Europe

Finance ministers from the euro area met in Poland in the middle of September to discuss the Greek debt crisis. American Treasury Secretary Tim Geithner joined them. Fabian Zuleeg, chief economist at the European Policy Center in Brussels, said the United States was right to get involved. "The intervention from the US has also shown at least a risk that the stability of the financial system as a whole — the global financial system — might be under threat again."

Earlier, the leaders of France, Germany and Greece held a conference call to discuss how to contain Europe's deepening financial crisis. Germany and France are Europe's two largest economies. Seventeen European Union countries use the euro as their currency. On September fifteenth, five major central banks agreed to lend additional dollars to European banks in the euro zone. The European Central Bank says the three-month loans will provide as many dollars as the banks need. The operations will end in December. The European Central Bank is acting with the United States Federal Reserve, the Bank of England, the Bank of Japan and the Swiss National Bank. The announcement helped lift European bank shares and major European stock lists.

The Paris-based Organization for Economic Cooperation and Development has lowered its growth estimates for the euro area. In Greece the economy has shrunk this year. German Chancellor Angela Merkel urged eurozone nations to do everything possible to avoid an "uncontrolled insolvency" by Greece. On September thirteenth, she warned that problems would quickly spread if Greece failed to pay its international rescue loans. And, she said, "If the euro fails, Europe fails." The next day, European Commission President Jose Manuel Barroso spoke to the European Parliament. He announced that the commission would propose creating "eurobonds." The idea is for euro zone governments to jointly guarantee their debts. Germany and France have opposed such bonds. Mr. Barroso also said the current system that lets individual countries easily block policy is not working. "I am convinced we need a deeper and more results-driven integration. A system based purely on intergovernment cooperation has not worked in the past and will not work in the future."

VOCABULARY
• Treasury Secretary – Министр финансов США (руководитель Казначейства);

• Organization for Economic Cooperation and Development – Организация экономического сотрудничества и развития, ОЭСР (создана в 1961 г.).

Public Administration

Text 1

Public administration attempts to explain how decisions in government are made as well as administrating projects to carry out those decisions. A public administration degree prepares international students for a career in government or non-profit work. Studying public administration can be an extremely rewarding experience for anyone looking to give back to their community by solving difficult problems.

US President Woodrow Wilson, one of the great proponents and teachers of public administration, wrote, "It is the object of administrative study to discover, first, what government can properly and successfully do, and, secondly, how it can do these proper things with the utmost possible efficiency and at the least possible cost either of money or of energy." This is no easy task! Thus, the study of public administration helps students realize the different ways to accomplish these two objectives.

Who Studies Public Administration?

While elected officials are the most visible part of our government, it is the daily government workers, or "bureaucrats," who do the majority of governmental tasks and functions. Some of these bureaucrats are public administrators and have a difficult job. They have to come up with implementing solutions to the most daring of society's challenges. They advise elected officials of the strengths and weaknesses of public programs. A public administrator manages public agencies, sets budgets, and creates government policies. Luckily, a public administration degree prepares international students to successfully problem solve and find solutions.

Public Administration Coursework

Public administration attempts to decipher how decisions in government are made as well as administrating government projects to carry out those decisions. A diverse background is required for the degree, with classes in public policy, management, sociology, and political theory.

For Example...

To illustrate the many decisions an administrator must handle, pretend for example, say there is an increase of violent crimes affecting a particular neighborhood. Public officials must come up with the most effective and efficient solutions in order to decrease the crimes in the area. How? One idea is to increase the number of police officers in the region, but how many are needed? Where should they be located? As more officers are moved, does this take away from serving residents in other neighborhoods?

Another possibility is to develop after-school programs for troubled teenagers. However, where is the money going to come from to do this? How do you entice adults and teenagers alike to participate? How can the police win the trust of the public in those areas? Perhaps the solution is to advocate increased jail

time for repeat offenders, yet challenges exist with this as well. Does punishing a person, rather than trying to rehabilitate them, serve society better or worse?

All these questions are small examples a public administrator must answer to solve a single problem. This is an ongoing endeavor, as government has many problems– from healthcare to technology to finance – to solve in order to create a more perfect society.

Text 2
10 Interesting Facts About the History of Public Administration

Public administration has a rich history that dates back to the Greeks. Public administration is putting laws in action to better serve a civilization and the public. While the idea of public administration dates back thousands of years, it played a significant role throughout history as countries developed and new technology changed the way we live and interact. Here's a look at 10 interesting facts about the history of public administration. It's interesting to see how far we've come and how public administration continues to develop as we deal with new challenges like the Internet and public safety.

1.   400 B.C. Plato recognizes the separation between management and develops the concept of democracy. At this time, the Greek people begin electing their leaders and become educated on social services. It is also at this time that politician's begin a very loose version of campaigning to expose ideas and platforms in order to gain a place in office.

2.   325 B.C. We all know Alexander the Great wasn't a guy who messed around. His organizational skills were beyond his time and helped him organize an army large enough (and smart enough) to conquer most of the world. This isn't your typical public administration, but it does illustrate how important proper delegation helps the government (or ruling party) conquer quickly.

3.   1525 Machiavelli realizes that cohesiveness and organization are essential tools for public administration. He also realizes that its most effective when you have a group of people who committed to a cause, versus a group of people who are being forced to participate. Machiavelli also established leadership qualities in subordinates.

4.   1776 Adam Smith pens his book, Wealth of Nations which discusses public administration and specialization. The book focuses on the economic state of America and what creates a wealthy nation. Smith's book becomes a benchmark for developing effective public administration that creates a capitalistic society.

Text 3

1.   1801 Thomas Jefferson creates the spoils system, sometimes known as the patronage system, in America. This tactic ensures voters are bargained with by the promise of jobs and wage raises by politicians running for office. In modern

voting, this process is often called the political machine and is now done in a less blatant way.

2.   1883 The Pendleton Act is created and slows down the spoils system. At this time the U.S. Civil Service Commission is developed due to President James Garfield's assassination. The man responsible for killing President Garfield is said to have been rejected from a civil service position. The Civil Service Commission prevents government officials from terminating civil servants without reason and requires civil servant exams for select positions.

3.   1900 Economist Fredric Taylor develops the need for budgets, cooperation between management and labor workers, and studying work methods to become more effective for the future. Taylor is dubbed the "father of scientific management." Taylor had a plan for which a socialist economy could become self-sufficient society.

4.   1927 Sociologist Elton Mayo starts the management system study of a Chicago electric company. This study looks at how environment effects productivity. This study becomes the first of its kind and is used in the management department of various industries to discover how to improve productivity and Mayo's study leads the Humans Relation Movement. One of the major things learned from this study is that monetary incentive means less to employees than belonging to a group and team morale.

5.   1964 The Civil Rights Act is created, protecting workers regardless of their sex, religion, race, creed or national origin. At the time, the Civil Rights Act is only implemented in the private sector work force. In 1972, the Civil Rights Act is passed for the public work sector as well.

6.   1990 It wasn't until 1990 that the American Disabilities Act was passed. This protects disabled in the work place and applies the Civil Rights Act towards disabled people accessing public and private domains. There are several parts to the America Disabilities Act and it was most recently amended in 2009 to overturn a Supreme Court ruling from over a decade ago that deemed a person could not be defined as disabled if they were working.

7.   Public administration is an ever evolving area. It's a subject we can learn a lot from and learn where we might be headed when implementing new laws. Organization and innovation are key factors in helping public administration develop in modern society. From Plato to Adam Smith, iconic historical figures have shown the people how to embrace their power. Public administration is the art of putting effective laws into place in the best interest of the people.

Text 4
Five Key Figures in the History of Public Administration

Public administration in the United States has undergone many changes over the years and decades as a result of fluctuations in economic and social conditions. Many individuals who were placed in charge of public administration

revolutionized it and left their mark for generations to come. Let's take a look at five key figures who did just that.

Woodrow Wilson

Woodrow Wilson remains the only president to hold a PhD. His training in the study of politics and history enabled him to publish many different essays in Political Science Quarterly, including one called, "The Study of Administration," which is regarded as his most important work.

In that essay, he laid out his belief in a bureaucracy composed of skilled workers chosen based on their merit. Before this idea, workers in the U.S. government's administration were hired through a system that often valued their loyalty to a political party. When president Wilson instituted his 'merit-based' system of hiring, it represented a sea change to national public administration that helped the U.S. bureaucracy became more efficient.

Also in the essay, "The Study of Administration," Wilson developed the idea that politicians should create policy, while administrators should help them implement, regardless of party affiliation. This theory is known as the policy/administration dichotomy. This idea from Wilson, along with his belief that the nation's administration should run like a business, dramatically changed the way government functioned during his presidency and beyond.

Fredrick Taylor

Fredrick Taylor is the, "father of the theory of scientific management." Taylor was trained as an engineer, and was the author of many industrial innovations that changed the face of industry. He saw that the workings of government could be improved by analyzing it through an industrial lens.

In The Principles of Scientific Management, Taylor writes that the "principal object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee." To achieve this, he thought each government employee should work as quickly and efficiently as possible, based on his claim that "maximum prosperity can exist only as the result of the determined effort of each workman to turn out each day his largest possible day's work."

Mary Parker Follett

Mary Parker Follett was one of the first thinkers to use the principles of social science and psychology to study industrial organization. Her focus was on the dynamics of human relations within industrial groups.

She was a brilliant scholar born to an affluent family in Massachusetts. Instead of choosing academia as her profession, she became a social worker. Her passion involved community-building initiatives. One of the practical outcomes of her work was to enable school buildings in Massachusetts to be used as community recreation and education centers during 'off' school hours. This model was eventually adopted in many other cities.

Follett believed in four fundamental principles of organization:

1. She saw coordination as the "Reciprocal Relating" of all elements of a situation;

2. She believed in the direct communication between all people involved in an organization, irrespective of their hierarchical position;

3. She advocated for the principle of maximum coordination in the principal stages of creating a project or policy, and;

4. She asserted that coordination is a continual process that should be kept running at all times.

Douglas McGregor

Douglas McGregor was important in the postwar research and practice of organization. His book The Human Side of Enterprise, published in 1960, applied a perspective of behavioral psychology to the theories of organization.

His main theory was that the assumptions managers make determine their own effectiveness, and they needed to believe in the capability of workers to engage effectively in work. He asserted that neither positive nor negative reinforcement were necessary, but that workers have the intrinsic motivation, potential, and capabilities required to work well. As he wrote, "Management does not put them there."

Robert C. Weaver

Robert Clifton Weaver was the first black presidential cabinet officer. He served under President Lyndon B. Johnson as the first Secretary of the Department of Housing, making him a notable figure in our nation's history.

Aside from his presidential cabinet position, Weaver made important contributions to the practice of public administration. He was part of Franklin D. Roosevelt's "black cabinet," a group of black administrators that specialized in matters of housing, education, and employment. He was later chosen by President Kennedy to be an advisor on civil rights. Kennedy then appointed him administrator of the Housing and Home Finance Agency.

Robert C. Weaver took a more holistic approach to administering housing programs. He offered awards for the design of public housing, and increased money for small businesses displaced by urbanization. He revived federal rent subsidies for the elderly, and stressed local initiatives as a way to solve local problems.

Text 5
25 Exciting Career Paths in Public Administration

If looking for a degree in public administration, there can be more to it than just program rankings and salary questions. What to do after graduation can be as daunting a task as getting an education. Because there is no one path to a career in public administration as there is with doctors or lawyers, what to do with your degree can be confusing.

To help clarify, we have gathered 25 exciting career paths in public administration. They can help you make the most of your education and your work days with choices on everything from an after school job to what can happen when public administration goes right.

Exciting Well Known Career Paths in Public Administration

1.   Fed Career

When one thinks of public administration, they often think of a government distributor or manager. And the most likely employer can be the federal government, which has their official site here. Their database allows for job searches by federal agency, state, and even field.

2.   Civil Service

Also known as government jobs, civil service tends to be more people oriented. This can mean working with citizens and residents on behalf of the federal government or local agency. Check out this guide from About.com with more on the job.

3.   Education Administrators

One of the largest parts of service is education. So it is no surprise that the need for qualified education administrators is on the rise. They provide instructional leadership and day to day management of educational institutions.

4.   Administrative Services Managers

A generic sort of sounding career, they plan, coordinate, and direct a broad range of services in everything from education to healthcare. State and local governments, as well as finance and insurance, are also potential employers.

5.   Public Administration Consultant

Being an expert in administration, many public administration professionals can go into consulting. They make policy and procedural recommendations for meeting budgets, deadlines, etc. Visit here for the profile page of a firm who specializes in that.

6.   Executive Director

This public administration career is the sort of CEO of a non-profit group. They head up the advocacy, fund raising, and other civic duties associated with the role. Usually chosen by the board of the non-profit, they are charged with running the entire organization.

7.   Director of Development

Want to stick to just the fundraising aspects of a non-profit? Then check out a career on the development side, with the director being the one in charge of funds raised. Tony Poderis of Raise Funds discusses what a good director of development is worth.

8. Program Analyst

A good stepping stone for public administrators, this job focuses on improving a single program within an institution. They can be responsible for planning, analyzing, and evaluating the effectiveness of a program. This section of the NIH has more on what they are specifically looking for.

9.   Program Director

Once you have mastered the above, a promotion to this public administration career may be in the works. The program director can be responsible for one, several, or all of a non-profit's programs. This article from eHow Money has more on the role.

10. City Manager

City managers are public administrators who try to make city governments operate with the efficiency of successful businesses. They are chosen by elected officials and can work for small towns on a part time basis or for large cities. This entry from State University has more on what they do, education required, and salary.

11. Mayor

Public administration professionals who have found success in one or more of the above positions can often put their names on the ballot and run for mayor or even a position on the city council. A record of leadership and results can often be required. The Philanthropic Family even included what they would like to see in their next mayor.

12. Public Service Employees Network

If you still need to know more about the above, click here. The PSEN has loads of resources for those interested in public administration. They have job finding resources, ways to get hired, and much more. You can even learn more about civil service tests.

Exciting Little Known Career Paths in Public Administration

13. Internship

Just about every field has options for interns, including public administration. This site keeps a massive database of available internship positions across the country. A few of the current available options include with non-profits, government organizations, and even law.

14. Internship Opportunities

If you didn't find what you were looking for above, click here. This database has many options available and branches out more for public administration. Current possible employers include publishers, marketing, and even an inventor's company.

15. Foreign Service Officer

These representatives promote U.S. interests abroad and can live dangerous and exciting careers. Part of the U.S. Department of State, many interested in public administration choose this career path. There are five positions within foreign service, and you can learn more here.

16. Iraq Transition Assistance Office

The ITAO provides a programming and oversight role to executive departments and agencies in concluding the remaining large infrastructure projects in Iraq. Public administration professionals are often needed by the agency. You can read more on their official site here.

17. PA in Afghanistan

Just like the above, public administration is needed in Afghanistan. Working with the Civilian Technical Assistance Program, they help to build effective structures, processes, and skilled personnel. Check out this "help wanted" ad with more information on the job.

18. Housing Specialist

Want to get people into houses but don't want to work for a bank? Then learn more about this public administration career. They are responsible for assisting families and youth with finding affordable housing.

19.   Case Manager

Similar to the above, a case manager helps the disadvantaged with their particular situation. This can include financial and medical issues. The job requirements for this position preferred those who are bilingual.

20.   Research Associate

Those just starting out on a public administration career may take work as research associates. They are charged with conducting research, interviews, materials, and reports. This job with the NAPA requires a bachelor's degree but prefers an MPA.

21.   Budget Analyst

If you enjoy numbers as much as you enjoy public administration, check out this career. This website is run by an actual budget analyst with the 30 years' experience in the field. You can learn more about it, prepare for it, and even get relevant reading materials.

22.   Field Examiner

Conduct field examinations to determine and appoint fiduciaries for the legally disabled in this career. Graduate education and experience are often required. This particular job listing is for those who want to work with veterans.

23.   Urban Planner

Also known as a regional planner, they help a community decide how to best utilize its resources. They often work with or for a local government and make recommendations on schools, roads, and other infrastructure projects. There is even a certification that can be gained when striving for this career.

24.   Association Leader

Think of your favorite non-profit or charity. They often need association leaders, aka public administration professionals, to help lead them to success. Visit the Center for Association Leadership to learn more about the careers, openings, and even get a Mentor Connector.

25.   U.S. Secretary

What happens when you reach the top of the public administration ladder? You get appointed to a high profile position by the President of the United States. This is a list of those who got their degrees in public administration and went on to become secretaries of health, labor, and housing and urban development.

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