

**ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ  
ОБРАЗОВАТЕЛЬНОЕ УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ  
«ОРЕНБУРГСКИЙ ГОСУДАРСТВЕННЫЙ АГРАРНЫЙ УНИВЕРСИТЕТ»**

**МЕТОДИЧЕСКИЕ МАТЕРИАЛЫ ДЛЯ ОБУЧАЮЩИХСЯ ПО  
ОСВОЕНИЮ ДИСЦИПЛИНЫ**

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**Форма обучения очно-заочная**

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## **1. Тематическое содержание дисциплины**

### **1.1. Тема 1: «Моя научная работа».**

#### **1.1.1. Перечень и краткое содержание рассматриваемых вопросов:**

##### **1. My scientific work № 1**

Чтение: My scientific work. Лексика: Лексический минимум по теме «My scientific work » (agenda adore (v) attractive awful baggy suit be fond of be keen on break the rules brilliant can't stand detest (v) mind (v) dispenser dreadful enjoy (v) entire content). Говорение: обучение монологической и диалогической речи по теме «My scientific work». Чтение и перевод текста:

Biotechnologist's favorite things Studying of biotechnology is a very high priority with me, especially as I dreamt to study biology and chemistry in complex from my childhood. So there're times when I break my agenda, go absolutely crazy and escape to my laboratory and work for the whole day without food and sleep. I really enjoy researching of undiscovered things.

I've got a superb laboratory – over 200 various chemical devices as well as chemicals itself – so you can guess that I just adore making experiments. I really like the entire content of my laboratory – all these tubes, shakers, washers, automatic dispensers and photocolorimeters. Ever since I was young I've loved looking at chemical reactions. I'm very fond of rats and mice – I've got two white mice at home, Arethna and Flossie. I like outstanding scientists and I read their works on brilliant biotechnology. I watch scientific programs on the television, as well. Some of them are wonderful. Also on my list of likes must be Jamaica. I love going on holiday and I go back there as often as I can. I can find many new interesting species of flora and fauna there. I tend to wear white overall – maybe because I couldn't afford it when I was a school pupil. I like wearing gloves and a mask, but I can't stand gloves when they are torn! One of my pet hates\* is when chemist's shops don't have gloves in my size. I think that's really awful. There're lots of other things I don't like. I detest violence, and the idea of nuclear war is very frightening indeed. I don't mind being interviewed, but I get annoyed when I get too much attention to my personality. I absolutely hate when people say that biotechnology is a boring thing – such people promote ignorance. I'm also not too keen on rude people and Australian soap operas – they are dreadful.

Работа над содержанием текста. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

Формы текущего контроля по теме: письменный опрос, лексико-грамматический тест.

##### **2. Грамматика. № 1**

Грамматика: Средства выражения и распознавания главных членов предложения. Определение границ членов предложения. Личные формы глагола в активном и пассивном залогах.

## **1.2. Тема 2: «Основы микробиологии» .**

### **1.2.1 Перечень и краткое содержание рассматриваемых вопросов:**

#### **1. «Fundamentals of microbiology» № 2**

Чтение: Fundamentals of microbiology. Лексика: Лексический минимум по теме «Fundamentals of microbiology» (cell – клетка, theory – теория, complex suite – сложный набор, consist of (v) – состоят из, contribution – вклад, dictate (v) – диктовать, establish (v) – установить, evolve (v) – развиваться, finite amount – конечное количество, gene theory – теория генов). Говорение: обучение монологической и диалогической речи по теме «Fundamentals of microbiology». Чтение и перевод текста:

DEVELOPMENT OF EARLY FOOD MICROBIOLOGY (BEFORE 1900 A.D.) It is logical to comprehend that our early Homo ancestors, the hunters and gatherers, were aware of

food spoilage and foodborne diseases. Even without any perception of the causative agents, they used ice and fire to preserve foods and make them safe. Around 8000 B.C., as agriculture and animal husbandry were adopted by the early civilizations, food supply, especially agricultural produce, became available in abundance during the growing seasons. Preservation of foods became important for uniform supply of food around the year. Between 8000 and 1000 B.C., many food preservation methods such as drying, cooking, baking, smoking, salting, sugaring (with honey), low-temperature storage (in ice), storage without air (in pits), fermentation (with fruits, grains, and milk), pickling, and spicing were used, probably mainly to reduce spoilage. However, one cannot be sure whether the society at that time recognized the implications of diseases transmitted through food. In the later periods, however, the scriptural injunctions laid by many religions suggest that the societies recognized an association of diseases with some foods. Some of the regulations, such as not eating meat from a diseased animal or an animal killed by a scavenger, or not eating a food that appeared unnatural or had been handled by an unclean person, were developed to safeguard the health of citizens against foodborne diseases. Fermentation was used extensively by many societies not only to preserve foods but also as a method to produce various types of desirable foods from milk, meat, fish, eggs, grains, fruits, and vegetables. Following the discovery of the ubiquitous existence of microorganisms (mainly bacteria and yeasts) by Leeuwenhoek around the 1670s, some individuals started associating the possible role of these organisms with food spoilage, food fermentation, and foodborne diseases. The major developments of ideas on the possible roles of microorganisms in foods and their scientific proof were initiated by Pasteur in the 1870s, followed by many other scientists before the end of the 19th century. This paved the way for the establishment of early food microbiology in the 20th century. Some of the major developments in the 19th century are briefly listed here.<sup>1,6,7</sup> Работа над содержанием текста. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

Формы текущего контроля по теме: письменный опрос, лексико-грамматический тест.

Работа над содержанием текста. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

## 2. Грамматика. № 2

Средства выражения и распознавания главных членов предложения. Определение границ членов предложения. Личные формы глагола в активном и пассивном залогах.

### 1.3. Тема 3: «Глобальные экологические проблемы» .

#### 1.3.1 Перечень и краткое содержание рассматриваемых вопросов:

##### 1. Global environmental problems. № 3

Чтение: Global environmental problems. Лексика: Лексический минимум по теме «Global environmental problems» (to pollute – загрязнять, chemical – химический, sea – море, lake – озеро, river – река, industrial – промышленный nuclear waste - ядерные отходы, to be dead - быть мертвым, species - виды to protect – защищать, danger – опасность, radiation – радиация, plant – растение, to plant - высаживать, сажать). Говорение: обучение монологической и диалогической речи по теме «Global environmental problems».

Чтение и перевод текста:

Environmental Problems of the Earth 1. What is environment? The environment is our physical surroundings. This includes both human (man-made), social and physical (natural) features. Natural features include soil, the atmosphere, vegetation and wildlife. Human features include housing, transport and industry. Social features include things such as culture, language and political systems. A variety of environmental problems now affect our entire world. As globalization continues and the earth's natural processes transform local problems into international issues, few societies are being left untouched by major environmental problems. Many people are concerned about human action in the environment. Human interference with

the environment causes many environmental problems. Some of the largest problems now affecting the world are acid rain, air pollution, global warming, hazardous waste, ozone depletion, smog, water pollution, overpopulation, and rain forest destruction. Every environmental problem has causes, numerous effects, and most importantly, a solution.

2. What causes acid rain? Acid rain is caused by the burning of fossil fuels. Burning oil, gas and coal in power stations releases sulphur dioxide ( $\text{SO}_2$ ) into the atmosphere. Burning oil and petrol in motor vehicles puts nitrogen oxides ( $\text{NO}_x$ ) into the atmosphere. These gases mix with water droplets in the atmosphere creating weak solutions of nitric and sulphuric acids. When precipitation occurs these solutions fall as acid rain.

3. What problems are caused by acid rain? Acid rain increases the acidity levels of rivers, lakes and seas. This can kill aquatic life. Acid rain increases the acidity levels of soils. This can kill vegetation. Acid rain from the UK has been found to destroy the roots and leaves of forests in Germany and Scandinavia. Acid rain can erode buildings and monuments (particularly if they are made from limestone).

4. What is global warming? Global warming is the worldwide warming of the atmosphere. Global warming is caused by the increases in the amount of carbon dioxide and other gases being released into the atmosphere by the burning of fossil fuels. These gases add to the natural greenhouse effect.

5. What is the greenhouse effect? To understand global warming you first need to know about the greenhouse effect. The greenhouse effect is a natural phenomenon that controls the balance of heat within the earth's atmosphere. It is the process whereby the natural layer of gases in our atmosphere traps a small percentage of the sun's radiation reflected from the earth's surface. Without the greenhouse effect, the average surface temperature would be about  $-18$  degrees Celsius.

6. What problems are caused by global warming? Sea levels will rise due to the melting of the ice caps. This will cause flooding in many low-lying areas of the world. These areas include Bangladesh, East Anglia (England) and The Netherlands.

7. What is water pollution? Water is necessary to life on earth. All organisms contain it; some live in it; some drink it. Plants and animals require water that is moderately pure, and they cannot survive if their water is loaded with toxic chemicals or harmful microorganisms. If severe, water pollution can kill large numbers of fish, birds, and other animals, in some cases killing all members of a species in an affected area. Pollution makes streams, lakes, and coastal waters unpleasant to look at, to smell, and to swim in. Fish and shellfish harvested from polluted waters may be unsafe to eat. People who ingest polluted water can become ill, and, with prolonged exposure, may develop cancers or bear children with birth defects. The major water pollutants are chemical, biological, or physical materials that degrade water quality. Pollutants can be classed into eight categories, each of which presents its own set of hazards.

8. What is the harmful effect of petroleum products? Oil and chemicals derived from oil are used for fuel, lubrication, plastics manufacturing, and many other purposes. These petroleum products get into water mainly by means of accidental spills from ships, tanker trucks, pipelines, and leaky underground storage tanks. Many petroleum products are poisonous if ingested by animals, and spilled oil damages the feathers of birds or the fur of animals, often causing death. In addition, spilled oil may be contaminated with other harmful substances.

9. What is the harmful effect of pesticides and herbicides? Chemicals used to kill unwanted animals and plants, for instance on farms or in suburban yards, may be collected by rainwater runoff and carried into streams, especially if these substances are applied too lavishly. Some of these chemicals are biodegradable and quickly decay into harmless or less harmful forms, while others are not biodegradable and remain dangerous for a long time.

10. What are environmental engineers? Environmental engineers develop solutions to environmental problems using the principles of biology and chemistry. They are involved in water and air pollution control, recycling, waste disposal, and public health issues. Environmental engineers conduct hazardous-waste management studies in which they evaluate the significance of the hazard, advice on treatment and containment, and develop regulations to prevent mishaps. They design municipal water supply and industrial wastewater treatment systems. They conduct research on the environmental impact of proposed construction projects, analyze scientific data, and perform quality-control checks. Environmental engineers are concerned with local and

worldwide environmental issues. They study and attempt to minimize the effects of acid rain, global warming, automobile emissions, and ozone depletion. They may also be involved in the protection of wildlife. Many environmental engineers work as consultants, helping their clients to comply with regulations and to clean up hazardous sites. Работа над содержанием текста. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

## 2. Грамматика. № 3

Бессоюзные предложения. Сложные синтаксические конструкции, типичные для стиля научной речи.

### 1.4. Тема 4: «Микробиологические основы» .

#### 1.4.1 Перечень и краткое содержание рассматриваемых вопросов:

##### 1. Microbiological foundations. № 4

Чтение: Microbiological foundations. Лексика: Лексический минимум по теме «Microbiological foundations» (acidity – кислотность, adhering – придерживающийся, alimentary tract – пищеварительный тракт, alkalinity – щелочность, contamination – загрязнение debris – обломки, foodstuff – продовольствие, intestinal – кишечный, lack of – отсутствие, lactic – молочный, layer – слой, multiply – умножать, particle – частица, penetrate – проникать, ray – луч, resistant – стойкий, vinegar – уксус). Говорение: обучение монологической и диалогической речи по теме «Microbiological foundations».

Чтение и перевод текста:

From the above discussion, it is apparent what, as a discipline, food microbiology has to offer. Before the 1970s, food microbiology was regarded as an applied science mainly involved in the microbiological quality control of food. Since then, the technology used in food production, processing, distribution and retailing and food consumption patterns have changed dramatically. These changes have introduced new problems that can no longer be solved by merely using applied knowledge. Thus, modern-day food microbiology needs to include a great deal of basic science to understand and effectively solve the microbiological problems associated with food. The discipline includes not only microbiological aspects of food spoilage and foodborne diseases and their effective control and bioprocessing of foods but also basic information of microbial ecology, physiology, metabolism, and genetics. This information is helping to develop methods for rapid and effective detection of spoilage and pathogenic bacteria, to develop desirable microbial strains by recombinant DNA technology, to produce fermented foods of better quality, to develop thermostable enzymes in enzyme processing of food and food additives, to develop methods to remove bacteria from food and equipment surfaces, and to combine several control methods for effective control of spoilage and pathogenic microorganisms in food. An individual who has completed courses in food microbiology (both lecture and laboratory) should gain knowledge in the following areas: • Determine microbiological quality of foods and food ingredients by using appropriate techniques • Determine microbial types involved in spoilage and health hazards and identify the sources • Design corrective procedures to control the spoilage and pathogenic microorganisms in food • Learn rapid methods to isolate and identify pathogens and spoilage bacteria from food and environment Работа над содержанием текста. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

## 2. Грамматика. № 4

Бессоюзные предложения. Сложные синтаксические конструкции, типичные для стиля научной речи.

### 1.5. Тема 5: «Развитие микробиологии в России» .

#### 1.5.1 Перечень и краткое содержание рассматриваемых вопросов:

##### 1. Development of microbiology in Russia. № 5

Чтение: Development of microbiology in Russia. Лексика: Лексический минимум по теме

«Development of microbiology in Russia» (apparently - по всей видимости bud – почка, corkscrew – спиральный, pleomorphic - плеоморфный, ribbon – лента, rod - палочка, sheaths – оболочка, slightly - немного, spiral – спиральный, standard media - обычная среда, tangled string - запутанная веревка). Говорение: обучение монологической и диалогической речи по теме «Development of microbiology in Russia». Чтение и перевод текстов:

Stages of development of microbiology: heuristic, morphological, physiological, immunological, molecular genetic.

The invention of the microscope and the discovery of microorganisms (A. Levenguk and others). The discovery of the first pathogenic microorganisms - the causative agents of the favus and anthrax.

The Pasteur period in the development of microbiology (second half of the 19th century). The work of L. Pasteur and his school. Their importance in the formation and development of medical, veterinary, industrial, agricultural microbiology. The work of R. Koch and his school. Their importance for medical microbiology. The discovery of pathogens of the main infectious diseases of man. Development of methods for their cultivation and differentiation.

Medical microbiology in the first half of the 20th century. Further discoveries of pathogens of infectious diseases (plague, syphilis, etc.). The study of pathogenic bacteria. The development of the chemotherapeutic direction in microbiology and medicine (P. Ehrlich and others). The discovery of antibiotics (A. Fleming and others).

The modern method in the development of medical microbiology (second half of the XX century). The importance of scientific and technological progress and discoveries in the field of molecular biology and molecular genetics for the further development of theoretical and applied medical microbiology, virology and immunology.

The discovery of viruses. The formation of virology as an independent science. D.I. Ivanovsky is the founder of virology. Virology in the first half of the XX century. The discovery of viruses that infect animals and humans, bacteria (bacteriophages) and tumors in animals (oncogenic viruses). Development of laboratory methods for the diagnosis of viral infections.

The progress of virology in the second half of the 20th century related to the study of the structure, biochemistry, and genetics of viruses. The discovery of new viruses - pathogens of human diseases. Development of modern methods of laboratory diagnosis, prevention and therapy of viral infections. Работа над содержанием текстов. Выполнение после текстовых упражнений и по закреплению лексического материала по теме.

#### 4. Грамматика. № 5

Неличные формы глагола. Причастие 1,2. Герундий. Инфинитив в составном именном и модальном сказуемом.

#### **2. Методические рекомендации по выполнению курсовой работы (проекта)**

*Курсовая работа (проект) не предусмотрены РУП.*

#### **3. Методические рекомендации по выполнению индивидуальных домашних заданий (контрольных работ)**

Индивидуальные домашние задания (контрольные работы) не предусмотрены РУП.