Оценочные средства для проведения аттестации по дисциплине «Иностранный язык» для обучающихся 1 курса по направлению подготовки 12.03.04 «Биотехнические системы и технологии (уровень бакалавриата)» форма обучения очная на 2023-2024 учебный год

Промежуточная аттестация по дисциплине проводится в форме экзамена.

Промежуточная аттестация включает лексико-грамматическое тестирование, краткое изложение содержания текста на русском языке, собеседование.

1. Вопросы для проверки индикаторов достижения компетенции УК-4.1 – выбирает на государственном и иностранном (-ых) языках коммуникативно приемлемый стиль делового общения, вербальные и невербальные средства взаимодействия с партнерами; УК-4.3 – ведет деловую коммуникацию в письменной и электронной форме, учитывая особенности стилистики официальных и неофициальных писем, социокультурные различия в формате корреспонденции на государственном и иностранном (-ых) языках

Выберите один или несколько правильных ответов лексико-грамматического теста для решения коммуникативных задач на иностранном языке:

1. When elements … with each other compounds are formed.
1) combine
2) are combined
3) combines

2. Now many scientists … on this problem.
1) work
2) are worked
3) are working

3. What … medicinal chemistry … ?
1) do … studies
2) does … studies
3) does … study

4. We … an experiment in the laboratory now.
1) perform
2) are performing
3) performs

5. The patient … laser treatment suffers from detached retina.

1) receive
2) receiving
3) received

6. The laser beam … the skin layers is very fine and sharp.
1) cut
2) cutted
3) cutting

7. The operation … by an experienced surgeon was successful.
1) performing
2) performs
3) performed

8. The incision … by a laser was very precise and clean.
1) made
2) making
3) maded

9. When you are in a clinical laboratory, you … disregard safety protocols.
1) cannot
2) must not
3) are not able to

10. Latex gloves … be used when there is a possibility of corrosive chemicals spilling onto your hands.
1) can
2) might
3) must

Вопросы для проверки индикаторов достижения компетенции УК-4.2 – использует информационно- коммуникационные технологии при поиске необходимой информации в процессе решения стандартных коммуникативных задач на государственном и иностранном (- ых) языках; УК-4.4. – демонстрирует интегративные умения использовать диалогическое общение для сотрудничества в академической коммуникации общения: внимательно слушая и пытаясь понять суть идей других, даже если они противоречат собственным воззрениям; уважая высказывания других как в плане содержания, так и в плане формы; критикуя аргументированно и конструктивно, не задевая чувств других; адаптируя речь и язык жестов к ситуациям взаимодействия; УК-4.5 – демонстрирует умение выполнять перевод профессиональных текстов с иностранного (- ых) на государственный язык и обратно

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

Computer networking enables quicker communication. Computers and the Internet have proven to be a boon in all the spheres of life. In the field of medicine, computers allow faster communication between a patient and a doctor. Doctors can collaborate better over the Internet. Today, it is possible to obtain experts' opinions within seconds by means of the Internet. Medical professionals sitting on opposite sides of the globe can communicate within minutes with the help of the Internet. It is due to computer networking technology that network communication has become easy. Medical practitioners can discuss medical issues in medical forums, they can blog, write articles, contribute to medical journals available online. Updates in the medical field, advancements in medicine, information about new methods of treatment, etc. can reach the common man within minutes, thanks to the Internet and easy access to computers. Doctors can exchange images and messages in seconds and derive conclusions speedily. They can seek advice and share knowledge in a convenient manner over the Internet.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

Water is one of the most important aspects of the human body and accounts for the majority of the body’s composition. Water is highly important because of the large number of chemical reactions in which it plays a role. As a result, not drinking enough water can cause a number of health problems.

Every chemical reaction that occurs in the human body occurs through water. All cells in the human body are soaked in water. Nutrients and oxygen are transported throughout the body using water and individual cells need water to bring the nutrients and oxygen into them. Water is used to cool the body down through the action of perspiration. Water lubricates joints and internal organs, such as the eyeballs.

Water is needed for most stages of digestion. The saliva that begins the process of digestion is partially made out of water, mixed with other enzymes. Water is used to ensure that the food easily slides down the esophagus. The digestive enzymes found in the stomach are also partially made out of water.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

The main tools of a bioinformatician are computer software programs and the internet. A fundamental activity is sequence analysis of DNA and proteins using various programs and databases available on the worldwide web. Anyone, from clinicians to molecular biologists, with access to the internet and relevant websites can now freely discover the composition of biological molecules such as nucleic acids and proteins by using basic bioinformatic tools. This does not imply that handling and analysis of raw genomic data can easily be carried out by all. Bioinformatics is an evolving discipline, and expert bioinformaticians now use complex software programs for retrieving, sorting out, analyzing, predicting, and storing DNA and protein sequence data. Large commercial enterprises such as pharmaceutical companies employ bioinformaticians to perform and maintain the large scale and complicated bioinformatic needs of these industries. With an ever increasing need for constant input from bioinformatic experts, most biomedical laboratories may soon have their own in-house bioinformatician. The individual researcher, beyond a basic acquisition and analysis of simple data, would certainly need external bioinformatic advice for any complex analysis. The growth of bioinformatics has been a global venture, creating computer networks that have allowed easy access to biological data and enabled the development of software programs for effortless analysis. Multiple international projects aimed at providing gene and protein databases are available freely to the whole scientific community via the internet.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

Bioengineering for Clinical Medicine is a research area that involves the design and development of technological products devoted to support clinicians in their daily job: diagnosing, pathology treatment, rehabilitation and research. The maturity of biomedical engineering as a well-established research field, together with the rapid development of medical

technologies and the continuous growth of the aging population that these technologies serves, are key factors for the tremendous development of this research field. Among all, three main fields are proposed in this MRU: biosensors and bioelectronics, integrated systems for biomedical applications and Information and Communication Technologies (ICT) for clinical medicine.

Activities include:

- Implantable and minimum-invasive biomedical devices for clinical applications as well as innovative analog and digital synthetic biology circuits.
- Advanced integrated systems for bioengineering applied to clinical medicine, through a highly interdisciplinary approach between technical sciences, biology and medicine.
- Advanced bioengineering technology integration applied to health prevention and for better understanding and managing of diseases, together with physical therapies for rehabilitation.
    - Thanks to the synergies that have been created in the last years among SUPSI and some companies and institutes/hospitals, it is possible to offer to the students up-to-date lectures in the broad field of Bioengineering for Clinical Medicine as well as master theses and semester projects in one of the interdisciplinary research fields mentioned above with a real connection to the medical and industrial word.
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    - **Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …**
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The world has changed greatly since the 1950s and the dawn of the electronic age when innovators such as Wilson Greatbach, an assistant professor of electrical engineering at the University of Buffalo in the United States of America, built the first cardiac pacemaker in his garage. The regulatory requirements alone could render such a scenario impossible today. And yet there are some similarities with those times 60 years ago. With software now also classified as a medical device, why couldn’t a student at any university, say, develop a new mobile phone or tablet app that would have the same impact in terms of health outcomes that Greatbach’s invention has achieved globally? Therein lies the excitement of medical device innovation, attracting some of the brightest talent on the one hand while on the other maintaining a multi-billion dollar global industry, and given the wide range of medical devices, from a syringe to a MRI scanner (there are some 10 000 generic items in the medical device universe) and changing disease patterns globally, there remains a strong demand for investment in medical device innovation, with biomedical engineers in particular playing a central role. That

medical devices (including in vitro diagnostics) play an important role in health care at all levels of health system delivery, and in both well resourced and poorly resourced settings, is widely accepted. Yet there remain many challenges, globally in optimizing the technology mix to ensure optimal efficiencies (both allocative and technical). WHO has been instrumental in helping address these challenges with, inter alia, the publication of a series of technical guides covering many aspects of the health technology/medical device life cycle (Medical device technical series). WHO has also played a leading role in examining and supporting the role of medical device innovation, with a particular focus on developing countries.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

A biomedical engineer at the hospital level is responsible for managing health technologies from assessment and introduction within the hospital to decommissioning. The WHO health technology life cycle (Figure 9.2) describes all the phases of health technology. Biomedical engineers not only manage day-to-day operations to ensure that the medical device infrastructure is performing reliably, but they are also responsible for understanding and managing the longer term issues of technology assessment, installation, integration with IT systems, managing hazard alerts and recalls, upgrades and developing transition strategies for replacement technologies. Biomedical engineers are sometimes involved in HTA committees in order to evaluate efficacy, safety and effectiveness of health technologies. The HTA process focuses on different technology aspects (such as clinical, technical, economic, ethical and legal). Biomedical engineers contribute to the process with their technical knowledge and capacity to interact with different fields professionals. Health risk management (HRM) is defined as the combination of strategic activities used to prevent, or reduce to a minimum, adverse event. Risks in health-care facilities are various: clinical, financial, strategic, legal, etc. Risk assessment requires the joint participation of different stakeholders within the organization. Biomedical engineers are an essential component of multidisciplinary HRM teams operating within health-care facilities, analyzing accidents involving medical devices which have caused – or contributed to produce – severe injuries to patients or health workers. They are often the only professionals available who possess a broad span of health technology knowledge that allows them to analyze deeply the operation of medical devices and to identify causes of errors (e.g. wrong maintenance, design deficiencies, human-machine interaction deficiencies, inappropriate use, etc.).

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

The world of medical devices is going through economical, technological, and globalization revolutions simultaneously, which are radically changing the healthcare processes and relevant professional skills that biomedical engineers need to develop and manage medical devices, along multi-year and multi-decade product life cycles. This is particularly true for BME professionals working in hospital systems who must ensure that hundreds of medical device types work harmoniously in the complex ecosystems of IT, business systems and organizational processes. These changes are putting unprecedented technical, financial, societal and political pressure on all health-care systems, regardless of size or wealth; but these changes also create new opportunities for better, safer and more universally accessible care, if the appropriate professional capabilities are established in hospitals, academia, professional associations, government and industry. BME professionals need new skills and education so they can fill a larger and more complex role as subject matter experts and as advocates for systemic intelligence across the various stakeholders in complex health-care systems. Those new skills will allow them to shape how these new challenges and opportunities are understood and managed at varied local, regional, national and international levels. The specific professional competencies needed will depend on each organization's level of resources and complexity, the kinds of services being offered, and the fiscal, organizational and technical maturity of the organization. The biomedical engineer's skill sets are in the process of being expanded, re-focused and refined to meet the organization's goals, in order to ensure that technologies are appropriately designed, evaluated, chosen, installed, integrated with IT systems and efficiently maintained over their life cycle to deliver the safest, most effective, affordable care.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

The field of regenerative medicine has flourished in recent years due to advances in stem cell biology and tissue engineering. That trend continues to this day, this time thanks to an innovative bioengineering process designed by a team

of researchers at the New York Stem Cell Foundation (NYSCF) (Sladkova et al., 2018). The Segmental Additive Tissue Engineering (SATE) process is used to produce bone grafts and leverages on the principle of "divide and conquer." Digital reconstructions of the bone defect are segmented into different modules, each of which is defined by discoidal geometry and defined thickness. This strategy of maintaining consistent spatial specifications in the smaller segments helps to fine-tune the seeding procedures and perfusion conditions in the bioreactor, and also helps to minimize product variability. Each of these modules are then used as a template for perfusion inserts and customized scaffolds, which are seeded with induced pluripotent stem cell-derived mesodermal progenitors (iPSC-MPs) and cultured in a modified bioreactor that helps to give rise to bone grafts. These bone grafts are then introduced back to the patient's body using compatible adhesives or fixation devices. All of these factors contribute to process optimization, a mandatory requirement for process reproducibility and translating the research from bench applications to clinical applications. The individual components and approaches used in this process serve to overcome the manufacturing-related challenges of producing graft materials for routine clinical applications.

Прочитайте, обсудите в группе, подготовьте резюме текста, содержащего профессионально-значимую информацию на иностранном языке в рамках деловой коммуникации, и представьте ее кратко в письменной форме. Используйте следующие фразы и выражения для составления резюме: The text deals with/is about/focuses on… / It also emphasizes/highlights / sets up … / The authors attempt to/ try to / make an attempt to … / In conclusion / We can conclude / To sum up …

MRI is one of the safest and most informative imaging modalities available to modern medicine, but its overall applicability is limited by long imaging times. The bedrock of MRI is that evolution under a linear gradient allows one to sample the Fourier space (k-space) of an image *one point at a time*. The first exception to this concept came in the early 90s, when it was recognized that locally sensitive receiver coils sample a weighted collection of k-space points, creating potential for scan acceleration. The trajectory of the linear gradients translate that static sampling distribution to measure all of k-space. By using an array of such coils, one can solve for points of k-space that were only sampled by the wings of the sampling distributions, allowing some lines of data to be skipped in an acceleration approach known as parallel MRI. The work presented here is based on regarding nonlinear gradients as the next step in this progression. Nonlinear gradient encoding also samples a distribution of k-space rather than a single point, whether used alone or in combination with receiver arrays. But with nonlinear gradients (NLGs), the sampling distribution can be updated dynamically during the readout of each line. The notion that NLGs

could reduce MRI scan times was first hypothesized in the early 2000s, and this goal has since been pursued from many different angles. Since scan time can sometimes be limited by the switching time of the gradient field, several groups looked at using NLGs to reduce this time, either by reducing the number of switching events needed to encode an image7 or by switching more rapidly8. Another approach to reducing scan time is to image a smaller region, and several groups have shown that NLGs can be used to shrink the imaging region to some target in the anatomy.

That nonlinear gradients could enhance parallel imaging by matching the spatial geometry of the gradients to that of receivers was also previously hypothesized and has been explored from several angles. O-space was the first imaging method explicitly designed to match receiver and gradient geometry, using a radially varying NLG to complement the azimuthal geometry of typical receiver arrays. Many other schemes have since been proposed (NSI15, MDE16, 4D-RIO17), but among those that have been experimentally validated, the addition of NLG encoding has shown only moderate improvements over equivalent methods without NLG encoding.

2. Вопросы для проверки индикаторов достижения компетенции УК-4.3 – ведет деловую коммуникацию в письменной и электронной форме, учитывая особенности стилистики официальных и неофициальных писем, социокультурные различия в формате корреспонденции на государственном и иностранном (-ых) языках; УК-4.1 – выбирает на государственном и иностранном (-ых) языках коммуникативно приемлемые стиль делового общения, вербальные и невербальные средства взаимодействия с партнерами

1) **Соотнесите русские термины с их английскими эквивалентами для решения задач деловой письменной коммуникации:**

1. CO2 лазер	a. Diode laser
2. Эксимерный лазер	b. Fractional laser
3. Аргоновый лазер	c. CO2 laser
4. Александритовый лазер	d. Alexandrite laser
5. Диодный лазер	e. Eximer laser
6. Фракционный лазер	f. Argon laser

2) **Соотнесите синонимы английских слов для решения задач деловой письменной коммуникации:**

1. storage	A. to include
2. to comprise	B. illness
3. likely	C. keeping
4. to reveal	D. probable
5. disease	E. to detect

3) **Соотнесите синонимы английских слов для решения задач деловой письменной коммуникации:**

1. to reveal	A. line
2. wrinkle	Б. similar
3. same	B. injury
4. lesion	Г. to detect

4) **Соотнесите синонимы английских слов для решения задач деловой письменной коммуникации:**

1. medical professional	A. to perform
2. to conduct	B. training
3. abnormal	C. disease
4. instruction	D. findings

5) **Соотнесите синонимы английских слов для решения задач деловой письменной коммуникации:**

1. medical condition	A. physician
2. image	B. to obtain
3. data	C. film
4. to fill	D. pathological
5. to get	E. to require

6) **Образуйте глаголы от следующих существительных на английском языке для решения задач деловой письменной коммуникации:**

NOUN	**VERB**
use	
sound	
variety	

7) **Образуйте глаголы от следующих существительных на английском языке для решения задач деловой письменной коммуникации:**

assistance	
focus	
application	
blood	

8) **Образуйте глаголы от следующих существительных на английском языке для решения задач деловой письменной коммуникации:**

heat	
finding	
coagulation	
disruption	

9) **Соотнесите русские термины с английскими эквивалентами для решения задач письменной коммуникации:**

1. углекислый газ	A. external serous layer
2. границы	B. carbon dioxide
3. паренхима	C. mediastinum
4. наружный серозный слой	D. vital capacity of the lungs

10) **Соотнесите русские термины с английскими эквивалентами для решения задач письменной коммуникации:**

5. жизненная емкость легких	E. total surface
6. средостение	F. apex
7. верхушка	G. parenchyma
8. общая поверхность	H. borders

Вопросы для проверки индикатора достижения компетенции УК-4.4 – демонстрирует интегративные умения использовать диалогическое общение для сотрудничества в академической коммуникации общения: внимательно слушая и пытаясь понять суть идей других, даже если они противоречат собственным воззрениям; уважая высказывания других как в плане содержания, так и в плане формы; критикуя аргументированно и конструктивно, не задевая чувств других; адаптируя речь и язык жестов к ситуациям взаимодействия; УК-4.5 – демонстрирует умение выполнять перевод профессиональных текстов с иностранного (-ых) на государственный язык и обратно

1) **Обсудите в группе и с целью осуществления деловой коммуникации сообщите, являются ли данные утверждения истинными или ложными:**

1. Carbon dioxide lasers operate in the infra-red spectrum.
2. Lasers minimize bleeding and swelling during soft tissue treatment.
3. Ultraviolet light damages the nucleic acid of microorganisms.
4. A pacemaker helps control abnormal respiratory rate.
5. A biomedical equipment technician is responsible for medical equipment maintenance.
6. Medicinal chemistry focuses on large organic molecules.
7. Drug discovery is the process of bringing a new drug to the market.
8. Lithium can also be useful as a drug.
9. Medicinal chemistry and pharmaceutical chemistry are purely chemical disciplines.
10. The main purpose of medicinal chemistry is to discover and develop new therapeutic agents.
11. Computational chemistry is of use to medicinal chemistry.
12. Drug discovery is followed by drug development.

2) **Используя информационно-коммуникационные технологии для поиска, сбора, хранения и обработки информации на иностранном языке подготовьте и представьте, применяя основные принципы презентации результатов исследовательской/проектной деятельности, рефераты на следующие темы:**

1. Advantageous and disadvantageous uses of lasers in medicine (Подготовьте реферат на иностранном языке на тему «Преимущества и недостатки применения лазеров в медицине»)
2.Major applications of lasers in medicine (Подготовьте реферат на иностранном языке на тему «Основные сферы применения лазеров в медицине»)
3. Prepare and give a talk about computerized tomography (Подготовьте реферат на иностранном языке на тему «Компьютерная томография»)
4. Types of medical equipment. Medical laboratory equipment (Подготовьте реферат на иностранном языке на тему «Виды медицинского оборудования»)
5. Laboratory medical equipment. Types, description, performance. Balances (Подготовьте реферат на иностранном языке на тему «Лабораторное медицинское оборудование. Весы. Типы. Описание. Функционирование»)
6. Physics and application of physics in medicine. Electroencephalography (Подготовьте реферат на иностранном языке на тему «Физика. Применение физики в медицине. Электроэнцефалография»)
7. Physics and application of physics in medicine. UV radiation (Подготовьте реферат на иностранном языке на тему «Физика. Применение физики в медицине. УВ- излучение»)
8. The brain. Anatomy, physiology and function (Подготовьте реферат на иностранном языке на тему «Головной мозг. Анатомия и физиология»)
9. Training of biotechnologists in Germany Подготовьте реферат на иностранном языке на тему «Обучение биотехнологов в Германии»)
10. Biological diversity. Convention on biological diversity Подготовьте реферат на иностранном языке на тему «Биологическое разнообразие. Соглашение о биологическом разнообразии»)

3) **Примеры контрольных вопросов для собеседования**
1. What does organic chemistry study?
2. What families of organic compounds do you know?
3. Give some examples of inorganic chemical compounds.
4. In what spheres of life are inorganic compounds applied?
5. How can we define biochemistry?
6. What do medical professionals depend on?
7. What does medical equipment help doctors and nurses do?
8. What types of medical equipment are there?

9. What is medical equipment necessary for?
10. What medical supplies are there in most emergency departments?

Утверждено на заседании кафедры, протокол №14 от 1 июня 2023г.

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