

Министерство науки и высшего образования Российской Федерации
НАЦИОНАЛЬНЫЙ ИССЛЕДОВАТЕЛЬСКИЙ
ТОМСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ (НИ ТГУ)

Физико-технический факультет

УТВЕРЖДЕНО:

Декан
Ю.Н. Рыжих

Оценочные материалы по дисциплине

Иностранный язык

по направлению подготовки / специальности

16.03.01 Техническая физика

Направленность (профиль) подготовки / специализация:

Компьютерное моделирование в инженерной теплофизике и аэрогидродинамике

Форма обучения

Очная

Квалификация

Инженер, инженер-разработчик

Год приема

2024

СОГЛАСОВАНО:

Руководитель ОПОП

Ю.Н. Рыжих

Э.Р. Шрагер

Председатель УМК

В.А. Скрипняк

Томск – 2024

1. Компетенции и индикаторы их достижения, проверяемые данными оценочными материалами

Целью освоения дисциплины является формирование следующих компетенций:

УК-5 Способен выстраивать межличностное и межгрупповое взаимодействие и общение на русском и иностранном языках, с учётом особенностей различных культурных, социально-исторических, этнических, философских, профессиональных контекстов.

Результатами освоения дисциплины являются следующие индикаторы достижения компетенций:

РОУК-5.1 Знает правила и нормы коммуникации на русском и иностранном языках, культурные нормы общения, разнообразные методы аргументации и убеждения в процессе коммуникации

РОУК-5.2 Умеет вести дискуссию, выстраивать аргументацию на русском и иностранном языках; учитывать историческую обусловленность разнообразия и мультикультурности общества при межличностном и межгрупповом взаимодействии; осуществлять коммуникацию, учитывая разнообразие и мультикультурность общества

2. Оценочные материалы текущего контроля и критерии оценивания

Элементы текущего контроля:

- тест;
- устный опрос \ дискуссии
- высказывание по теме.

Пример теста (РОУК-5.1):

Exercise 1

Choose the correct option for each gap.

- 1 I _____ a lot of notes in yesterday's science class.
 - a. did
 - b. took
 - c. passed
 - d. handed in
- 2 I'm thinking about _____ chemistry next year because I'm finding it very boring.
 - a. enrolling
 - b. dropping
 - c. failing
 - d. sitting
- 3 The teacher called Tim's parents because he hadn't been _____ any of his classes.
 - a. doing
 - b. sitting
 - c. attending
 - d. graduating
- 4 I am currently doing a _____ on the ancient Egyptians for history class.
 - a. exam
 - b. project
 - c. research
 - d. presentation
- 5 I was very relieved when I found out that I'd _____ all my exams.
 - a. sat

- b. passed
- c. got
- d. revised

- 6 I always feel anxious before giving a _____
- a. presentation
 - b. essay
 - c. exam
 - d. research

Exercise 2

Complete the sentences with the words from the box. Use each word ONLY ONCE

enrol – essay – exam – expelled – graduate – hand in – homework – revising – presentation – university

- 1 Ken left _____ with a diploma in Physics.
- 2 Before I _____ in the course, I need to know how much it will cost.
- 3 I am sitting an _____ next week, so I need to revise.
- 4 Diana gave an interesting _____ on light in physics class.
- 5 I have to write a 2000-word _____ on space exploration.
- 6 You'll lose marks if you don't _____ your assignment on time.
- 7 I usually do my _____ at the kitchen table.
- 8 I spent the whole weekend _____ for my exam.
- 9 We were all pleased when we heard that the bully had been _____ from our school.
- 10 After I _____ from college, I might take some time off and go travelling.

Exercise 1. Answer Key:

1b 2b 3c 4b 5b 6a

Exercise 2. Answer Key:

1 university, 2 enroll, 3 exam, 4 presentation, 5 essay, 6 hand in, 7 homework, 8 revising, 9 expelled, 10 graduate

Пример тем для дискуссии по теме Science&Technology (ПОУК-5.2):

Вопросы для обсуждения:

1. Technology: Good or Bad? Is technology mostly good or bad? How can we use technology in a good way and stop the bad things it can do?
2. Science and the Future: Do you think science will save the world, or end it? Why do you think this? Give some examples.
3. Technology Makes Us Lazy? Do you think technology makes people lazy? If yes, how can we stop being lazy because of technology?
4. Too Much Technology? Do we use too much technology? What are the good and bad things about using technology a lot?
5. New Technology: What new things, like phones or internet, have changed our lives the most in the last 15-20 years? Were these changes good or bad, and why?
6. Robots and Jobs: Will robots take away many people's jobs? How can people change if this happens?

7. Online School: Is learning online as good as learning in a classroom? What are the good and bad things about each way?
8. Older People and Tech: How do you think old people feel about modern technology? What are the things they worry about?
9. Too Much Button Pushing: Are we using technology too much and hurting our bodies because of it?
10. Things Tech Should Not Replace: What things should technology never change? Should some things stay human and natural?
11. Biggest Tech Invention: What is the most important thing that people invented in the last 50 years? Why do you think this?
12. Money for Science: Should governments give more or less money for science research? Why? Give examples of science that you think is important.
13. No Tech For a Week: What would your life be like if you didn't have your phone or computer for one week?
14. AI: Good or Bad? Is Artificial Intelligence (AI) dangerous? Talk about the good things and the bad things that AI could do.
15. Science: Practical or Just for Knowledge? Should scientists only try to make things that we can use now? Or is it good to just learn things for fun, even if it doesn't help right away?

Пример устного опроса по теме Inventions:

1. What is the most important invention in your opinion, and why?
2. Can you name three inventions that have significantly changed the world? Explain their impact.
3. What are some of the challenges inventors face in bringing their ideas to life?
4. Do you think inventors are born or made? Explain your answer.
5. How has technology changed the way we live, work, and communicate?
6. Imagine you could invent something new. What would it be and how would it solve a problem?
7. What are some ethical considerations related to new inventions and technologies?

Задание (РОУК-5.2):

Рассказать о себе (Self-introduction). Подготовить самопрезентацию, используя шаблон, и лексику по теме «Характер». На занятии представить свою самопрезентацию в форме устного ответа.

План презентации:

1. Greeting
2. Your name
3. Location
4. Position and company
5. Qualifications
6. Experience
7. Family
8. Hobbies
9. Age
10. Fun fact

Лексика по теме «Характер»:

extroverted
introverted
talkative
quiet
confident

shy
kind
trustworthy
reliable
loyal / disloyal
sincere / insincere
secretive
direct
sneaky
tolerant / intolerant
open minded / narrow minded
strong willed / weak willed
determined
ambitious
hard working
lazy
bright
clever
intelligent
generous
humble
arrogant
modest
bossy
optimistic
pessimistic

3. Оценочные материалы итогового контроля (промежуточной аттестации) и критерии оценивания

Форма промежуточной аттестации в 1,2,3,4,5 семестре – зачет.

Результат зачета определяется формулировкой «зачтено» / «не зачтено» на основании заданий текущего контроля.

Формулировка «**зачтено**» выставляется, если студент владеет различными средствами устной и письменной иноязычной коммуникации с учетом ситуации общения и профессионального контекста, владеет лексическим и грамматическим материалом; ошибки в речи не затрудняют коммуникацию или затрудняют ее незначительно, студент способен корректировать свое коммуникативное поведение.

Формулировка «**не зачтено**» выставляется, если студент не демонстрирует владение средствами устной и письменной иноязычной (профессиональной) коммуникацией с учетом ситуации общения и профессионального контекста, не владеет лексическим и грамматическим материалом; допускает многочисленные ошибки в речи, которые затрудняют коммуникацию и искажают смысл сказанного; студент не способен корректировать свое коммуникативное поведение.

Форма итогового контроля в 6 семестре – экзамен.

Экзамен включает в себя лексико-грамматический тест и ответы на вопросы по пройденному материалу.

Лексический тест:

1. *A pressure vessel is primarily designed to:*

a) *Generate electrical current*

- b) Contain liquids or gases under high pressure*
 - c) Reduce aerodynamic drag*
 - d) Transmit mechanical power*
2. Which of these is NOT a common application of CAD software?
- a) Creating 3D models of mechanical parts*
 - b) Analyzing fluid flow using CFD*
 - c) Producing technical drafting*
 - d) Designing electronic circuits*
3. In mechanical engineering, understanding stresses is crucial for:
- a) Calculating fuel consumption*
 - b) Determining the power output voltage*
 - c) Preventing structural failures*
 - d) Simulating biodegradable material degradation*
4. The main goal of CAM software is to:
- a) Analyze structural stresses*
 - b) Control and automate manufacturing processes*
 - c) Simulate CFD simulations*
 - d) Design integrated circuits*
5. Which of the following is NOT typically a focus area within chemical engineering?
- a) Developing new biodiesel sources*
 - b) Optimizing the production of fuel*
 - c) Studying circuit behavior*
 - d) Analyzing chemical reactions*
6. Fossil fuels are considered a non-renewable energy source because:
- a) They are environmentally non-toxic*
 - b) They are biodegradable*
 - c) They are generated too slowly to replenish*
 - d) They require high input voltage*
7. The development of alternative fuels is crucial to combat:
- a) Increasing input voltage*
 - b) Food shortage*
 - c) The depletion of fossil fuels*
 - d) The flyaway value of aircraft*
8. What is a prototype in engineering?
- a) The final product ready for mass production*
 - b) A scaled model for CFD analysis*
 - c) An initial model to test a design or concept*
 - d) A detailed drafting blueprint*
9. In electrical engineering, a key component of a circuit is the:
- a) pressure vessel*
 - b) propellant*
 - c) power supply*
 - d) trebuchet*

10. What does the unit "volt" measure in an electrical circuit?
- a) Current flow
 - b) Electrical potential difference
 - c) Power consumption (watt)
 - d) Resistance to flow
11. Aerospace engineering includes the design and development of:
- a) circuit card assemblies
 - b) integrated circuits
 - c) spacecraft and aircraft
 - d) siege engines
12. The use of a counterweight in a trebuchet demonstrates:
- a) Higher thrust velocity
 - b) Mechanical advantage
 - c) Improved interpersonal skills
 - d) Greater heat loss
13. What does "Mach" refer to in aerospace engineering?
- a) A unit of electric current
 - b) The ratio of speed to the speed of sound
 - c) The internal fuel capacity of an aircraft
 - d) The flyaway value of a spacecraft
14. Which of the following is NOT typically considered a key trait for a successful engineer?
- a) Dependability
 - b) Strong organizational skills
 - c) Courage
 - d) A long-term approach to problem-solving
15. An iterative procedure is a method that involves:
- a) A single, high-risk experiment
 - b) A step-by-step process with repeated refinement
 - c) Using a ramjet for launch
 - d) Ignoring heat loss

Answer Key:

- 1. b
- 2. b
- 3. c
- 4. b
- 5. c
- 6. c
- 7. c
- 8. c
- 9. c
- 10. b
- 11. c
- 12. b
- 13. b

14. c

15. b

Грамматический тест:

1. Motion is a change in an object's _____ over time.

- a) a position
- b) the position
- c) position
- d) positions

2. You _____ wear safety glasses when you are in the laboratory.

- a) must to
- b) must
- c) should to
- d) have to

3. The scientists _____ their research on quantum electronics last year.

- a) finished
- b) have finished
- c) finishing
- d) finish

4. The velocity of an object _____ as it falls due to gravity.

- a) increase
- b) increases
- c) are increasing
- d) have increased

5. The circuit _____ a number of components.

- a) is consist
- b) consists
- c) have consisted
- d) consisting

6. The propellant in this rocket _____ very carefully.

- a) is to handle
- b) must handle
- c) must be handled
- d) must handling

7. Electromagnetism _____ to understand how motors and generators work.

- a) helps
- b) is help
- c) help
- d) are help

8. They _____ a new type of integrated circuit for their latest project.

- a) are developed
- b) is developing
- c) have developed
- d) will developing

9. _____ you studied the theory of relativity before?
- a) Did
 - b) Are
 - c) Have
 - d) Is
10. The experiment _____ as planned; the results were very clear.
- a) going well
 - b) goes well
 - c) went well
 - d) is going well
11. The mass of an object is _____ than its weight.
- a) different
 - b) more different
 - c) very different
 - d) different than
12. If the input voltage is too high, the circuit _____ damaged.
- a) be
 - b) is
 - c) will be
 - d) will been
13. The team _____ all the necessary tests, and the prototype is ready.
- a) has performed
 - b) performed
 - c) have performed
 - d) is performing
14. They are planning _____ on alternative fuels for next year's project.
- a) focus
 - b) for focus
 - c) to focus
 - d) focusing
15. The lever makes it _____ to lift heavy objects with less effort.
- a) easy
 - b) more easy
 - c) easier
 - d) the easiest
16. We need a _____ to measure the current precisely.
- a) a instrument
 - b) an instrument
 - c) one instrument
 - d) instrument
17. The density of the metal _____ when it is heated.
- a) change
 - b) changes
 - c) is change

d) is changing

18. The scientist _____ on the problem for several hours now.

- a) work*
- b) is working*
- c) has been working*
- d) has worked*

19. They _____ a lot of compulsory courses in the first semester.

- a) are having*
- b) have*
- c) has*
- d) having*

20. I _____ such a powerful radial compressed gas turbo engine before.

- a) never see*
- b) have never seen*
- c) didn't see*
- d) not saw*

Answer Key:

- 1. c*
- 2. b*
- 3. a*
- 4. b*
- 5. b*
- 6. c*
- 7. a*
- 8. c*
- 9. c*
- 10. c*
- 11. a*
- 12. c*
- 13. a*
- 14. c*
- 15. c*
- 16. b*
- 17. b*
- 18. c*
- 19. b*
- 20. b*

Вопросы к экзамену:

- What is chemical engineering?
- How does chemical engineering affect the world?
- What types of problems do mechanical engineers fix?
- What kinds of computer methods do mechanical engineers use?
- What is electrical engineering?
- What products do electrical engineers make?
- What kinds of aircraft have you been on?
- How has aerospace engineering change travel?

What is electricity?

What would be an advantage of a series circuit? Of a parallel circuit?

What qualities are important for an engineer? Why?

Talk about engineering education. Why do engineers need a lot of education? What subjects are necessary?

Лексико-грамматический тест. Данная форма используется в рамках **текущей и промежуточной аттестации** с целью осуществления контроля освоения лексики и грамматики изучаемого языка. Тесты текущего и промежуточного контроля оцениваются по процентной шкале, где проценты соответствуют баллам: 50-67% - «удовлетворительно» («зачтено»); 68-84% - «хорошо» («зачтено»); 85-100% - «отлично» («зачтено»).

Говорение. Беседа осуществляется в форме ответов на вопросы по пройденным темам с использованием изученного лексического и грамматического материала.

Результаты экзамена определяются оценками «отлично», «хорошо», «удовлетворительно», «неудовлетворительно» и являются средним арифметическим баллов, полученных за все задания в рамках итоговой аттестации.

Оценка *«отлично»* выставляется, если студент уверенно владеет различными средствами устной и письменной коммуникации, лексическим и грамматическим материалом; допускает незначительные (не более 2х грамматических и 3-4х лексических; продолжительность речи не менее 3х минут) ошибки в речи, которые не затрудняют коммуникацию.

Оценка *«хорошо»* выставляется, если студент владеет различными средствами устной и письменной коммуникации, лексическим и грамматическим материалом; допускает незначительные (не более 4х грамматических и 5-6ти лексических; продолжительность речи не менее 3х минут) ошибки в речи, которые не затрудняют коммуникацию; студент способен корректировать свое коммуникативное поведение.

Оценка *«удовлетворительно»* выставляется, если студент неуверенно и не в полном объеме владеет средствами устной и письменной коммуникации, не демонстрирует разнообразие в использовании лексического и грамматического материала; студент с трудом способен корректировать свое коммуникативное поведение.

Оценка *«неудовлетворительно»* выставляется, если студент не демонстрирует владение средствами устной и письменной коммуникации, лексическим и грамматическим материалом; многочисленные ошибки в речи затрудняют коммуникацию и искажают смысл сказанного; студент не способен корректировать свое коммуникативное поведение.

4. Оценочные материалы для проверки остаточных знаний (сформированности компетенций)

Read the text and answer the questions:

Albert Einstein is not only one of history's most important physicists, but his **quirky personality** and fame also made him a cultural icon. So much so that Time magazine even named him Person of the Century. The inventions he **came up with** and the fundamental laws of physics he figured out **underpin all of our modern-day life**, **giving rise** to the invention of lasers, telecommunications satellites, and cellphones. They're everywhere!

Early Life

Albert Einstein was born in Ulm, Germany, on March 14, 1879, but spent most of his childhood in Munich before his family moved to Milan, Italy. After graduating from the Swiss Polytechnic Institute at age 21, Einstein **had a hard time finding employment**. He **tried to apply for**

multiple academic positions and was actually **turned down** because of a recommendation letter that one of his teachers wrote for him.

Career

Albert Einstein found **full-time work** as a patent clerk in Bern, Switzerland, in 1902 and soon thereafter married Mileva Marić. They would eventually have two sons together. In 1905, often called Einstein's "miracle year," he published **four hugely important theories**, including that of special relativity, or as most people know it, $E=MC^2$. Einstein **faced significant obstacles** in his **path to a successful academic and scientific career**. There were very few **Jews** in academia in the 1910s when Einstein became a professor, first in Prague, then in Switzerland, and then in Berlin.

General Relativity

Einstein finished formulating what is considered to be his masterpiece, his **General Theory of Relativity**, in 1915. General relativity wasn't actually proven until 1919 when Sir Arthur Eddington was able to observe it happening with a **solar eclipse**. Also in 1919, Albert Einstein **became instantly world-famous**, divorced his first wife, and married his cousin Elsa Löwenthal.

Nobel Prize

Adding more **luster** to his name, Einstein was **awarded the Nobel Prize for Physics** in 1921 for his theory of the photoelectric effect. He left Germany for the United States in 1933 after having been essentially **chased out** of Germany by the **Nazis** and became a member of the Institute for Advanced Study in Princeton. While living in Princeton, Albert Einstein continued his theoretical studies and became a U.S. citizen in 1940. In addition to his research, Einstein is also known for his **deep commitment to many humanitarian causes** and his **wry sense of humor**. It is said that when Einstein was asked to explain the theory of relativity, he said, "Put your hand on a **hot stove** for a minute, and it seems like an hour. But sit next to a beautiful woman for an hour, and it seems like a minute. That's relativity."

Conclusion

Albert Einstein died on April 18, 1955, at the age of 76. Every time you pick up a cell phone to answer a call, you're using the laws of quantum mechanics. Every time you look at a satellite television image, you're using something that **invokes** the theory of relativity. Einstein's work continues to be felt today and is going to remain important for generations to come. The things I remember about Einstein are more his personality: the man who **warned** President Roosevelt **about the dangers of nuclear weapons**, the man who was **offered** the second **presidency** of Israel and turned it down, and **the rumpled-hair elderly professor** who once, when faced with **paparazzi**, **stuck out his tongue**, resulting in the most iconic picture of this amazing personality.

1. What was Albert Einstein named by Time magazine?
 - a) The Greatest Physicist of All Time
 - b) Person of the Century
 - c) Man of the Year
 - d) The Most Influential Scientist
2. Where was Albert Einstein born?
 - a) Milan, Italy
 - b) Bern, Switzerland
 - c) Ulm, Germany
 - d) Prague, Czech Republic
3. Why did Einstein have difficulty finding a job after graduating?
 - a) He didn't apply for academic positions.
 - b) He wasn't qualified enough.

- c) He received a poor recommendation letter from a teacher.
 - d) He preferred working in patents.
4. What is often referred to as Einstein's "miracle year"?
- a) 1915
 - b) 1902
 - c) 1940
 - d) 1905
5. What is the famous equation that came from Einstein's theory of special relativity?
- a) $E=MC^2$
 - b) $F=MA$
 - c) $A^2 + B^2 = C^2$
 - d) $PV=nRT$
6. What event proved Einstein's General Theory of Relativity?
- a) A nuclear explosion
 - b) A solar eclipse
 - c) An experiment in Berlin
 - d) A discovery in Switzerland
7. For which theory did Einstein receive the Nobel Prize in Physics?
- a) The Theory of Special Relativity
 - b) The Theory of General Relativity
 - c) The photoelectric effect
 - d) Quantum mechanics
8. Why did Einstein leave Germany in 1933?
- a) He wanted to pursue opportunities in the United States.
 - b) He was offered a better job in Princeton.
 - c) He was forced out of Germany by the Nazis.
 - d) He wanted to work with Arthur Eddington
9. Besides his scientific work, what else was Einstein known for?
- a) His love for money and fame
 - b) His commitment to humanitarian causes and his sense of humor
 - c) His passion for sports and adventure
 - d) His involvement in political campaigns
10. What iconic photo of Albert Einstein was mentioned in the text?
- a) Einstein giving a lecture.
 - b) Einstein receiving the Nobel Prize.
 - c) Einstein sticking out his tongue.
 - d) Einstein with his second wife.

Answer Key:

- 1. b
- 2. c
- 3. c
- 4. d
- 5. a
- 6. b

- 7. с
- 8. с
- 9. б
- 10. с

Критерии оценивания: Тесты считаются выполненными, если верных ответов не менее 50%. Говорение: в полном или не в полном объеме владеет средствами устной коммуникации, демонстрирует разнообразие в использовании лексического и грамматического материала.

Информация о разработчиках:

Зеремская Юлия Александровна, доцент кафедры английского языка в сфере научной коммуникации ФИЯ ТГУ;

Мягких Елена Николаевна, преподаватель кафедры английского языка в сфере научной коммуникации ФИЯ ТГУ;

Яшутина Ирина Валерьевна, старший преподаватель кафедры английского языка в сфере научной коммуникации ФИЯ ТГУ.