**Разработка занятия по теме «Машиностроение» для студентов III курса системы СПО**

**План занятия:**

|  |  |
| --- | --- |
| Дисциплина | Иностранный язык (английский) |
| Тема урока | Чтение технических текстов по разделу «Инженерное дело». Составление плана пересказа текста, обсуждение прочитанного на основе текста, дискуссия. |
| Вид занятия | практическое |
| Тип занятия | Изучение нового материала. |
| Оборудование | раздаточный материал (тексты) |
| Цели занятия | Образовательные:   * закрепить навыки владения английским языком в приложении к учебной деятельности; * закрепить теоретический материал.   Развивающие:   * способствовать развитию творческого и логического мышления; * развивать умения анализировать, сравнивать, сопоставлять факты.   Воспитательные:   * мотивировать студентов к изучению иностранного языка; * способствовать воспитанию внимательности, целеустремленности; * способствовать развитию интереса к получению образования, будущей профессии. |

**Структура занятия:**

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| --- | --- | --- | --- |
| **№ п/п** | **Этап занятия** | **Содержание работы** | **Время (мин.)** |
| 1. | Организационный момент | Активизация внимания студентов, включение в рабочий процесс | 3 |
| 2. | Проверка домашнего задания | Определение готовности студентов и проверка домашнего задания | 5 |
| 3. | Постановка цели | Определение цели и задач урока | 5 |
| 4. | Основной этап урока | Выполнение заданий с целью закрепления изученного материала | 65 |
| 5. | Домашнее задание | Объяснение порядка выполнения домашнего задания и его оценивания | 5 |
| 6. | Подведение итогов урока | Общая оценка работы студентов | 5 |
|  |  |  | 90 |

**Технологическая карта занятия**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| № п/п | Этап занятия | Время, мин. | Деятельность преподавателя | Деятельность студентов | Результат |
| 1. | Организационный момент | 3 | Проверка готовности аудитории  Проверка готовности студентов  Good day!  I’m glad to see you! Take your seats!  What date is it today?  What day is it today?  Thank you for your answers! So let’s begin our lesson!  What was your homework?  Are you ready? | Называют дату проведения занятия  Называют день недели | Концентрация внимания студентов |
| 2. | Проверка домашнего задания | 5 | Let’s check your home task  \_\_\_\_\_\_, can you read and translate these sentences?  \_\_\_\_\_, what can you add?  \_\_\_\_\_, what can you add?  \_\_\_\_\_, what can you add?  Thank you very much! | Выполнение грамматического упражнения по разделу «Времена» | Включение в работу |
| 3. | Формулировка целей и задач урока | 5 | Сегодня мы переходим к изучению нового раздела «Инженерное дело».  В данном разделе мы изучим основные понятия, категории, области машиностроения, их виды: гражданское строительство, электротехника и электроника, энергомашиностроение, техника безопасности, химическое машиностроение, ядерная техника и др.  Целью нашего занятия является комплексная работа над текстами, изучение технических терминов, выполнение лексических упражнений по данной теме. | Освоить лексику, выполнить упражнения, прочитать и перевести тексты по выбору, составить план пересказа | Мотивация к изучению темы, определение цели и задач занятия |
| 4. | Основной этап урока | 65 | 1.**Изучение новой лексики по данному разделу**   1. to deal with - иметь дело с, работать 2. operation - действие, работа 3. complex - множество 4. property - свойство 5. field - область, сфера 6. to consume - потреблять 7. among - среди, между 8. to transmit - передавать, пропускать 9. extremely – чрезвычайно, крайне, очень 10. to reduce – сокращать, умешать 11. application – применение, использование, употребление. 12. Trend - направление, тенденция 13. Towards - к, по направлению 14. to lower - снижать, уменьшать 15. device - устройство, аппарат, прибор 16. single – один, единственный 17. to create – создавать, проектировать, разрабатывать 18. dimension – размеры, 19. to replace - заменять 20. digital - цифровой 21. analogue - аналоговый 22. speed - скорость, быстрота 23. maintenance - эксплуатация, техническое обслуживание 24. purpose - цель; назначение, намерение 25. artificial - искусственный 26. to perform – делать, выполнять 27. to intend - намериваться 28. to move – двигать(ся), передвигать(ся), перемещать(ся) 29. to require – нуждаться (в чем-л.), требовать (чего-л.) 30. essential – существенный, необходимый, основной 31. to devote - посвящать 32. to select – выбирать, отбирать 33. particularly – особенно, в частности 34. appropriate – подходящий, соответствующий 35. to specify – точно определять, устанавливать 36. to withstand – противостоять, выдерживать 37. procedure – методика, метод 38. to assist – помогать, содействовать 39. to suggest – предлагать, советовать 40. occupation – род занятий, профессия 41. improvement – улучшение, усовершенствование   **2.Выполнение лексических упражнений по разделу**   1. Перевод предложений по теме:   1. Mechanical engineers deal with machinery, mechanisms and engines.  2. Computers can perform several millions of operations in a second.  3. Some problems are too complex to solve.  4. Synthetic materials have useful mechanical and physical properties.  5. He is a specialist in the field of electronics.  6. Production of aluminium consumes a lot of electric power.  7. There was a small village among the fields.  8. Mobile phones transmit and receive microware radio signals.  9. Knowledge of materials properties is extremely important for engineers.  10. Automation reduces the costs of production.  11. Application of new techniques raised the quality of production.  12. Use of composite materials is a new trend is engineering.  13. Rivers in Siberia flow towards the north.  14. Safety belts can lower the risk of trauma in road accident.  15. Modern cars have a number of safety devices.  16. We didn’t see a single solution of the problem.  17. Computer programmers create new software.  18. Egyptian pyramids are structures of very large dimensions. Computer allow to work with three dimensional models.  19. Digital telephone systems are replacing analogue ones.  20. Digital sound recording is made on compact discs.  21. Analogue signal can be transformed into digital one.  22. New models of computer processor have greater speed.  23. The maintenance of the device is not very difficult.  24. To become a good specialist is the purpose of my study.  25. The first artificial satellite was launched on the 4th of October, 1957.  26. Robots can perform the work faster than people.  27. We intended to complete the experiment by Friday.  28. The Earth moves on its orbit around the Sun.  29. Working on computer requires much attention.  30. Fast typing is an essential skill nowadays.  31. He devoted himself to research work.  32. John was selected for the basketball team.  33. He was particularly interested in modern Internet technologies.  34. Every computer device has an appropriate driver.  35. The instructions specify how the device is to be used.  36. New artificial materials can withstand high temperatures.  37. The testing procedure is rather simple.  38. The young nurse was assisting at her first operation.  39. They suggested to make a new research.  40. His occupation is a project manager (начальник строительства),  41. The test showed that the device needs improvements.   1. **Прочитайте следующие слова, используя транскрипцию, и найдите их русские эквиваленты:**   canal  material  mechanism  pneumatic  ventilation  signal  laser  radar  optics  revolution  parallel  aerodynamics  navigation  atmosphere  rocket  reactor  radiation  radioactive  method   1. **Найдите в нижней колонке перевод английских слов:**   1.appropriaritate  2.essential  3.property  4.speed  5.to assist  6.to create  7.to reduce  8.to require  9.to select  10.to suggest  11.to transmit  A.отбирать  B.передавать  C.помогать  D.предлагать  E.свойство  F.скорость  G.создавать  H.сокращать  I.соответствующий  J.существенный  K.требовать   1. **Прочтите и переведите следующие словосочетания на русский язык:**   1.design of large buildings  2.construction materials  3.to operate machinery of all types  4.electric power and signals  5.engineering problems  6.electronic circuits  7.important developments  8.to transmit power  9.to reduce power losses  10.communication systems  11.speed of computer operations  12.techniques of modern shipbuilding  13.particular requirements of production  14.to withstand the high temperatures  15.to reduce accidents  3**.Чтение и перевод текстов по разделу.**  У вас 10 - 15 минут на эту работу.  За это задание вы получите оценки:  “5” full answer without mistakes;  “4” answer with one - two mistakes;  “3” answer with three - five mistakes;  “2” answer with six or more mistakes. (критерии оценки указываются на доске)  Лучшие студенты представят свой пересказ перед группой и получат дополнительную оценку.  So let’s begin!  Thank you very much! Your work was very productive!  Оценки!!! Основные ошибки!!!  The best students are: \_\_\_, \_\_\_\_.  Please, tell us about ….  Выслушиваем 1 – 2 студентов!!! | Записывают новую лексику, слушают произношение слов  Повторяют слова за преподавателем  Читают по очереди по несколько слов, записывают транскрипцию сложных слов и выражений при необходимости  Работа по «цепочке» в группе  По очереди читают и переводят сначала предложения, после текст, вместе помогают составить план пересказа  Работа в парах | Достижение цели занятия посредством выполнения задач |
| 5. | Домашнее задание | 10 |  | Выучить слова, ответить на вопросы по тексту | Определение домашнего задания |
| 6. | Подведение итогов | 2 |  | Освоить лексику, прочитать и перевести текст, составить план пересказа | Определение результатов, степени достижения цели занятия |

**Приложение 1**

**WHAT IS ENGINEERING?**

In general, engineering is a science that deals with design, construction and operation of structures, machines, engines and other devices. Engineer is a person who has received technical education and has a basic knowledge of other engineering fields, because most engineering problems are complex and interrelated. The term engineering is difficult to translate into Russian because it has a lot of meanings. Most often it is translated as: инженерное дело, техника, машиностроение, строительство. There exist the following main branches of engineering:

**Civil Engineering (Гражданское строительство)**

Civil engineering deals with the design of large buildings, roads, bridges, dams, canals, railway lines, airports, tunnels and other constructions. A civil engineer must have a thorough knowledge of the properties and mechanics of construction materials, the mechanics of structures and soils, and of hydraulics and fluid mechanics. Among the main subdivisions in this field are construction engineering (строительство), transports engineering (дорожный транспорт) and hydraulic engineering (гидротехника).

**Mechanical Engineering (Машиностроение)**

Engineers in this field design, test, build, and operate machinery of all types. The field is divided into:

1. machine-tools, mechanisms, materials, hydraulics and pneumatics
2. heat as applied to engines, work and energy, heating, ventilation, and air conditioning. A mechanical engineer must be trained in mechanics and hydraulics, metallurgy and machine design. A mechanical engineer designs not only the machines that make products but the products themselves.

**Electrical and Electronics Engineering (Электротехника и Электроника)**

This is the widest field of engineering, concerned with systems and devices that use electric power and signals. Among the most important subjects in the field are electric power and machinery, electronic circuits, control systems, computer design, superconductors, solid-state electronics, robotics, lasers, radar, consumer electronics, and fibre optics.

Electrical engineering can be divided into four main branches: electric power and machinery, electronics, communications and control, and computers.

**Electric Power and Machinery (Энергетика и энергомашиностроение)**

Engineers working in this field design and operate systems for generating, transmitting, and distributing electric power. Several important developments appeared in this field. One of these is the ability to transmit power at extremely high voltages in both the direct current (DC) and alternating current (AC) modes, reducing power losses. Another is the real-time control of power generation, transmission and distribution, using computers.

**Electronic engineering (электроника)**

Electronic engineering deals with the research, design and application of circuits and devices used in the transmission and processing of information.

The revolution in electronics is the trend towards integrating electronic devices on a single tiny chip of silicon or some other semiconductive material. Much of the research in electronics is directed towards creating even smaller chips, faster switching of components, and three-dimensional integrated circuits.

**Communications and Control (Техника средств связи и управление)**

Engineers in this field work on control systems and communication systems that are used widely in aircraft and ships, in power transmission and distribution, in automated manufacturing and robotics.

Major developments in this field are the replacement of analogue systems with digital systems and copper cables with fibre optics (optical fibres). Digital systems lower electrical noise. Fibre optics lowers interference, has large carrying capacity, and is extremely light and inexpensive to manufacture.

**Computers engineering (Компьютерная техника)**

Computer engineering is now the most rapidly growing field. Computer engineers design and manufacture memory systems, central processing units and peripheral devices. Major developments in this field are microminiaturization (design of Very Large Scale Integration (VISI) chips) and new computer architectures. Using VLSI, engineers try to place greater numbers of circuit elements onto smaller chips. Another trend is towards increasing the speed of computer operations through the use of parallel processors and superconducting materials.

**Aeronautical and Aerospace Engineering (Авиакосмическая техника)**

Aeronautics deals with the whole field of design, manufacture, maintenance, testing, and use of aircraft for both civil and military purposes. It involves the knowledge of aerodynamics, structural design, propulsion engines, navigation, communication, and other related areas,

Aerospace engineering is closely connected with aeronautics, but is concerned with the flight of vehicles in space, beyond the earth's atmosphere, and includes the study and development of rocket engines, artificial satellites, and spacecraft for the exploration of outer space.

**Naval Engineering (Кораблестроение)**

Naval architects are engineers who design and supervise construction of ships. Ships must be designed and built so that they are safe, stable, strong, and fast enough to perform the type of work intended for them. A naval architect must be familiar with the variety of techniques of modern shipbuilding.

Marine engineering is a specialized branch of mechanical engineering devoted to the design and operation of systems, both mechanical and electrical, needed to propel a ship. Engineers in this field develop diesel engines and steam turbines that provide enough power to move the ship at the required speed.

**Chemical Engineering (Химическое машиностроние)**

This branch of engineering is concerned with the design, construction, and management of factories in which the essential processes consist of chemical reactions. The task of the chemical engineer is to select and specify the design that will best meet the particular requirements of production and the most appropriate equipment for the new applications.

**Nuclear Engineering (Ядерная техника)**

This branch of engineering is concerned with the design and construction of nuclear reactors. In addition to designing nuclear reactors that yield specified amounts of power, nuclear engineers develop the special materials necessary to withstand the high temperatures and radioactivity. Nuclear engineers also develop methods to shield people from the harmful radiation produced by nuclear reactors.

**Safety Engineering (Техника безопасности)**

This field of engineering has as its object the prevention of accidents. Safety engineers develop methods and procedures to safeguard workers of hazardous occupations. They also assist in designing machinery, factories, ships, and roads, suggesting alterations and improvements to reduce accidents.

**Дополнительный словарь:**

Chemical engineer инженер – химик

Chief engineer главный инженер

Civil engineer инженер - строитель

Electrical engineer инженер электро техник

Highway engineer дорожный инженер

Marine engineer инженер судовой

Mechanical engineer инженер - механик

Metallurgical engineer инженер - металлург

Mining engineer горный инженер

Operating engineer инженер - эксплуатационник

Sanitary engineer инженер по санитарной технике

Systems engineer инженер – системный программист

Transportation engineer инженер транспорта

Integrated circuit интегральная микросхема

Structural design проектирование конструкций

Solid – state electronics электроника на полупроводниках

To shield заслонять, защищать

Safe безопасный

Naval architect кораблестроитель - проектировщик

Stable устойчивый

Appropriate подходящий, соответствующий

Interference помехи

Hazardous опасный

Fibre optics волоконная оптика

To provide обеспечивать, предусматривать

Yield выход

Steam turbine паровая турбина

Copper wire медный провод

To prevent предотвращать, препятствовать, предупреждать

Alteration изменение, переделка, перестройка

Naval architect кораблестроитель, судостроитель

Carrying capacity пропускная способность

To safeguard охранять, защищать, предохранять

VLSI очень широкомасштабная интеграция

**Answer the questions:**

1. Is engineering a science?
2. How can we translate the word “engineering”? What are the Russian equivalents for this term?
3. What do civil engineers deal with?
4. What are the main subdivisions in the field of civil engineering?
5. What do mechanical engineers deal with?
6. What knowledge is necessary for a mechanical engineer?
7. What are the four main branches of electrical engineering?
8. What are the major developments in the field of communication systems?
9. What are the major developments in the field of computer engineering?
10. What is aerospace engineering concerned with?
11. What do naval architects design?
12. What is marine engineering devoted to?
13. What is the task of chemical engineers?
14. What is nuclear engineering concerned with?

**MODERN ENGINEERING TRENDS**

Among various recent trends in the engineering profession computerization is the most widespread. Computers are widely used for solving complex problems as well as for handling, storing, and generating the enormous volume of data modern engineers must work with.

Engineers in industry work not only with machines but also with people, to determine, for example, how machines can be operated most efficiently by workers. This is called ergonomics. The aim of ergonomics is to make the working place more comfortable and the work itself easier. A small change in the location of the controls of a machine or of its position with relation to other machines or equipment, or a change in the muscular movements of the operator, often results in greatly increased production. Ergonomics looks for criteria for the efficient design of large, complicated control panels that monitor nuclear reactor operation.