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УНИВЕРСИТЕТ

Mechanisms and Simple Machines. Industrial equipment.

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1-ТОБК



- **emphasis** – ударение, акцент, подчеркивание;
- **to devise** – придумывать, изобретать;
- **consistent** – совместимый, согласующийся;
- **to practice** – заниматься чем-либо; применять, осуществлять, практиковать;
- **rupture** – разрыв;
- **shrinkage** – сжатие, усадка;
- **torsion** – кручение;
- **shear** – сдвиг;
- **spring** – рессора;
- **conjunction** – соединение;
- **turret** – револьверный станок;
- **gear-cutting** – зуборезный станок;
- **transfer machine** – агрегатный, автоматический станок;
- **to spin** (spun, span) – крутить, вертеть, вращать.
- **to encompass** – заключать, включать, содержать;

Complete the sentences using the correct variant:

1. Strength of materials considers resistance to various loads: bending, rupture, compression, friction, shrinkage, torsion, _____ and others.

- a) shear b) gear-cutting c) equipment

2. Electrical engineering concerns electrical _____, appliances and the sphere connected with electric current.

- a) equipment b) emphasis c) spring

3. A lathe is a machine tool which _____ a block of material to perform various operations with the help of a cutting tool.

- a) encompasses b) practices c) spins

4. The broad discipline of engineering _____ a range of more specified subdisciplines.

- a) devises b) encompasses c) spines

5. There are the following types of machine-tools: lathes, boring, _____, transfer, stamping.

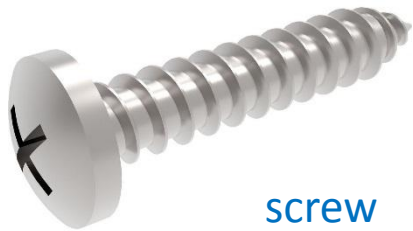
- a) gear-cutting b) consistent c) shear

The concept of engineering has existed since ancient times as fundamental inventions of mechanics were devised: pulley, lever, wheel, axle, wedge and screw.



ancient lever

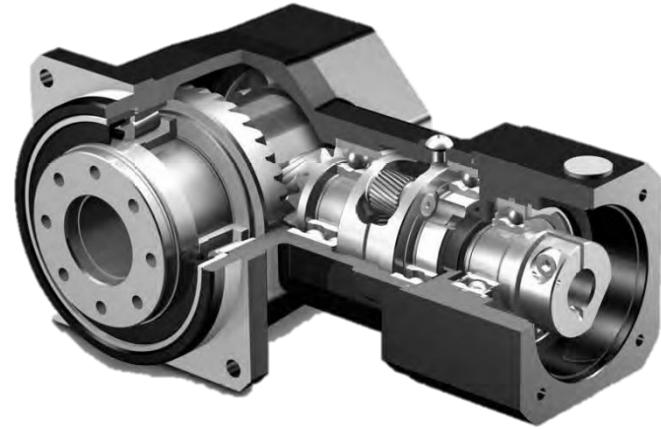
wheel



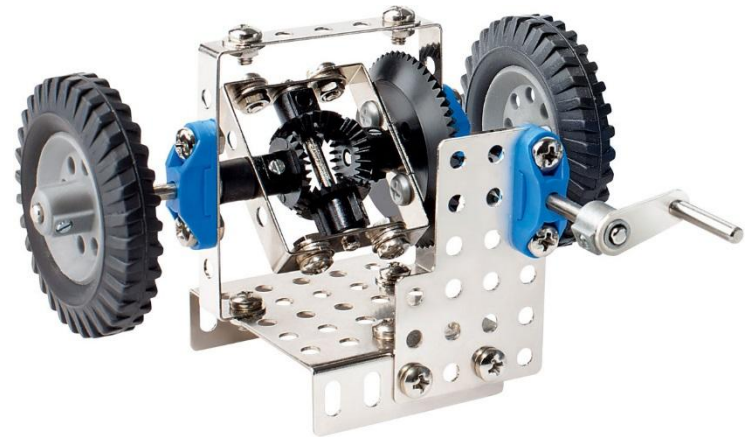
screw

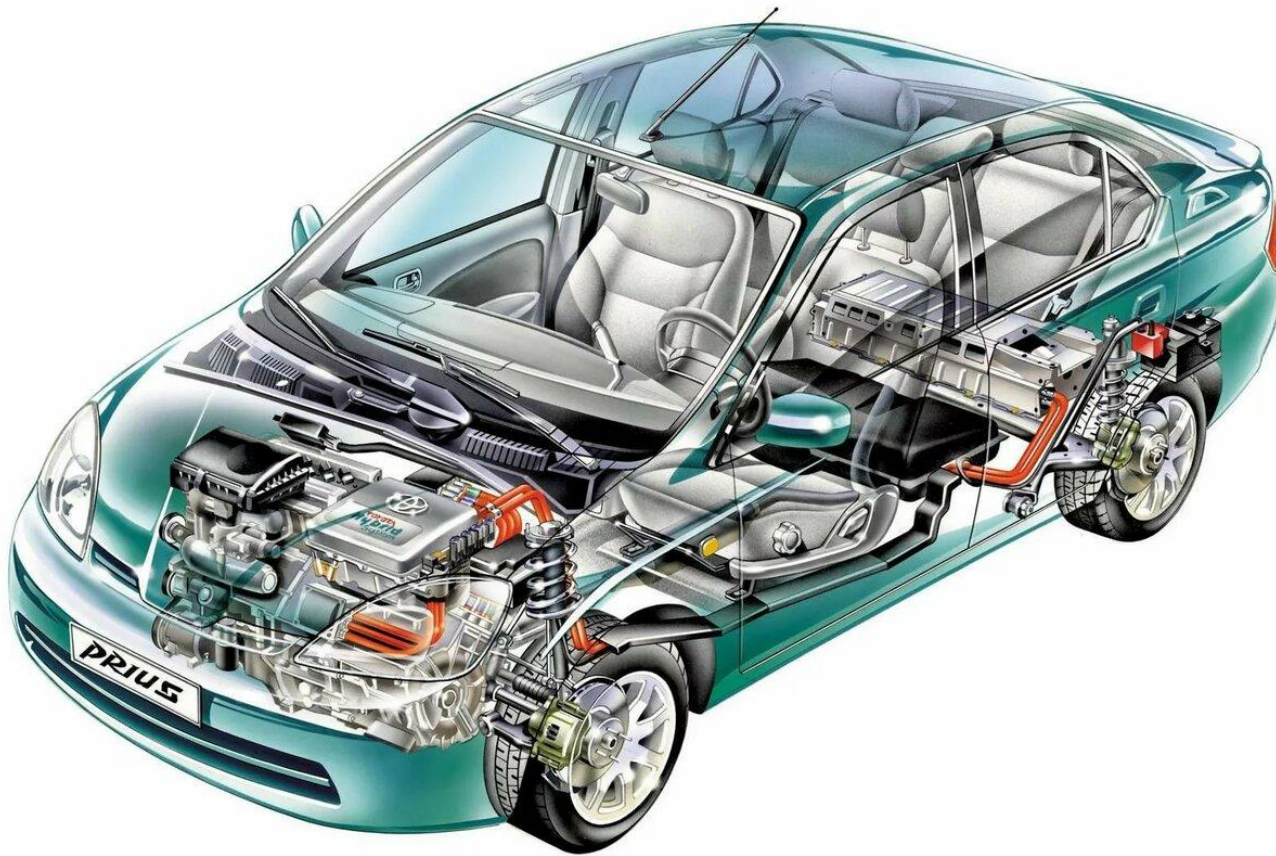


axle



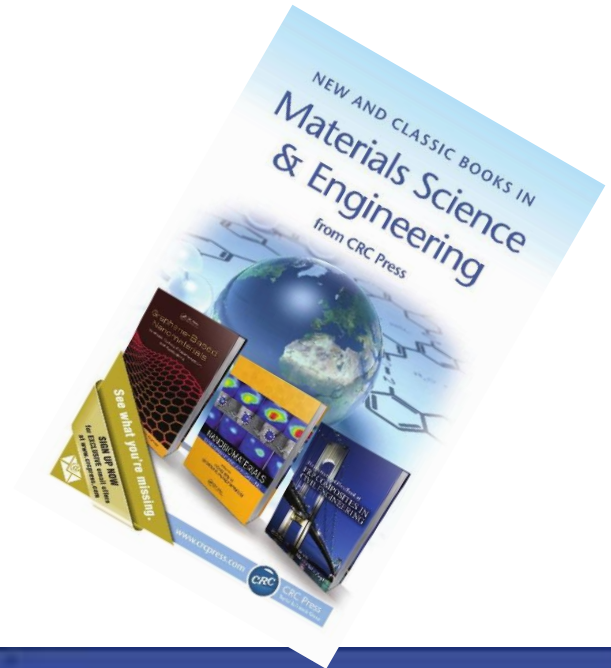
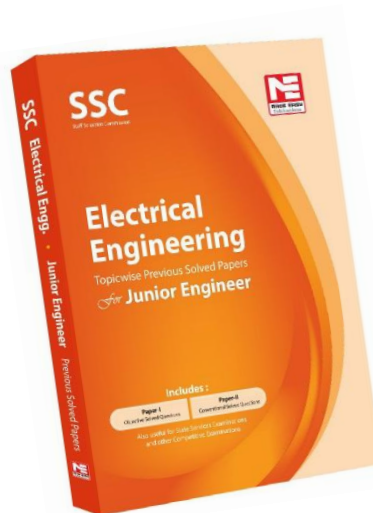
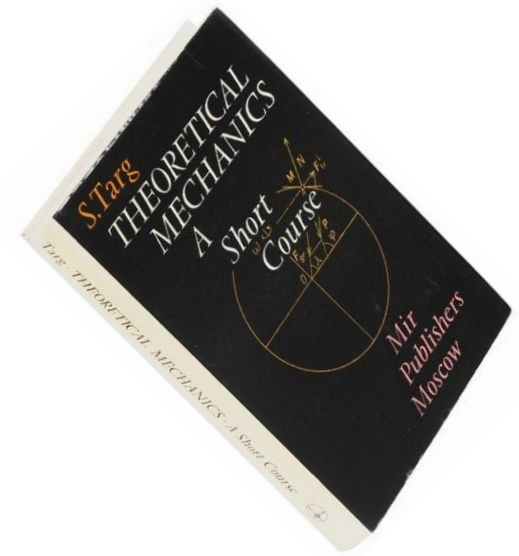
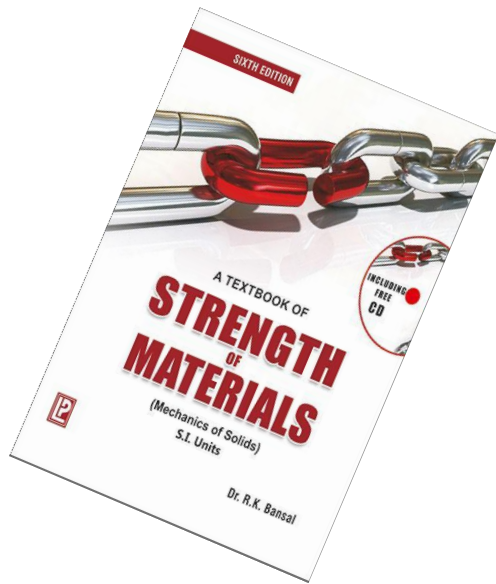
The word mechanism has many meanings. In kinematics, a mechanism is a means of transmitting, controlling, or constraining relative movement. Movements which are electrically, magnetically, pneumatically operated are excluded from the concept of mechanism. The central theme for mechanisms is rigid bodies connected together by joints.



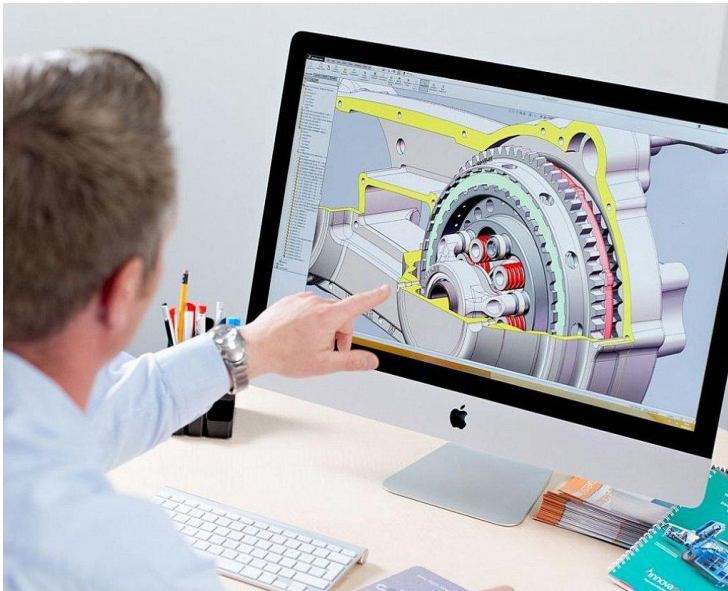


ombination of rigid or
formed and connected so
definite relative motions
from the source of power
to the resistance to be overcome. A machine
has two functions: transmitting definite
relative motion and transmitting force. These
functions require strength and rigidity to
transmit the forces.

Beside general educational subjects the students study specialized ones: strength of materials, theoretical mechanics, hydraulics, electrical engineering, details of machines, science of materials, technological processes.



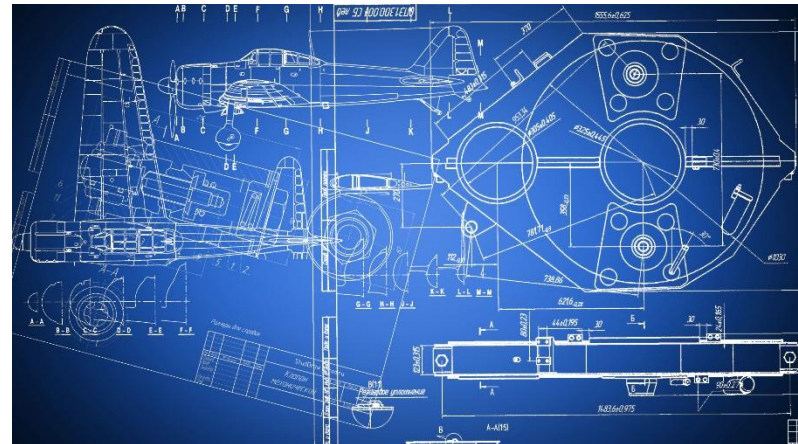
One who practises engineering is called an engineer and should design and develop various kinds of machinery, to operate it and to foresee the behavior of equipment under specific operating conditions.



an engineer



drawings



In practical work engineers use their knowledge of science, mathematics, and appropriate experience in their field. Engineers should predict how well their designs will perform to their specifications by testing prototypes, models, by making destructive and stress tests.



Rockwell Hardness Test

Non-Destructive Testing (NDT)





Engineers typically include a factor of safety in their designs to reduce the risk of unexpected failure and to prevent accidents. Safety engineers develop methods and procedures to safeguard workers in hazardous occupations.



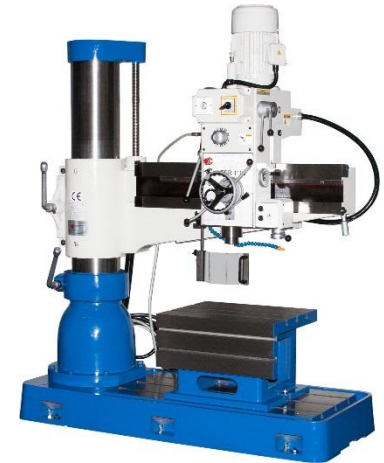
The most important subject is the types, design and functioning various equipment and machine-tools. There are the following types of machine-tools: lathes, milling, drilling, grinding, boring, gear-cutting, transfer, stamping, forging machines, turret, engine, copying lathes, machining centres and CNC (computer numerical control).



lat
he



machining
centres



drilling machine



milling
machine



gear-cutting
g



Examples of Simple Machines used in everyday life.

Simple Machines



Answer the questions:

1. What specialized subjects do the students study?
2. What types of machine-tools do you know?
3. What knowledge should an engineer possess?
4. What meanings does the word mechanism have?
5. What does engineering deal with?
6. In your opinion, what should be done in the sphere of safety engineering?

Sources:

1. http://window.edu.ru/catalog/pdf2txt/805/73805/52844?p_page=2
2. <https://multiurok.ru/files/praktichieskoie-zaniatiiie-73-machines-and-mechanis.html>
3. <https://infopedia.su/13xb016.html>