

# Cheap research papers for you

Theoretic basics of electrical engineering, abbreviated toe - a technical discipline that is studied by students who study electrical power, electrical engineering specialties. The subject of toe study is the basics of electricity and electromagnetism. Toe is considered one of the most difficult subjects in these specialties, and this is quite a true statement. Solving some problems on complex topics (transients, electromagnetism) causes great difficulties for many students, since there are specialists who can help even with the most complex tasks.

The theoretical foundations of electrical engineering lay the Foundation of knowledge for the study of subsequent subjects related to electricity (electronics, automation, etc.). Therefore, it is important to understand this subject, for this you first need to learn the basic laws:

[Cheap research papers for you](#)

## **Ohm's law:**

This is the basic law of electrical engineering, without knowledge of which attempts to understand electrical engineering are useless. The law shows the relationship between the current drop in a conductor, its resistance, and the current strength. For easier memorization, it is depicted as a triangle.

## **Joule-Lenz Law**

The law States: the amount of heat  $Q$  (joules) that is released in a conductor as a result of passing a direct current through it depends directly on the current strength  $I$  (amps), the resistance of the conductor  $R$  (ohms) , and the time of its passage  $t$  (seconds):

$$Q=I^2Rt$$

## **Kirchhoff's first law**

The sum of all currents flowing through the node is zero. The essence of the law is that how many currents flowed into the node, so many currents flowed out. Example for node A:  $I_1+I_2=I_3+I_4$

## **Kirchhoff's second law**

The law establishes the relationship between the amount of EMF and the amount of voltage drop on the resistances of a closed circuit of electric circuits. If the currents coincide with the bypass direction, they are positive, if they do not coincide, they are negative.

## **The law of a full current**

The basic law of electromagnetic fields establishes the relationship between the magnetic force and the force of the current passing through the surface. The total current is the algebraic sum of the currents that permeate a surface bounded by a closed loop. The magnetizing force along the contour is equal to the total current passing through the surface bounded by this contour.