Course name: **Basics of Electrical Engineering, Measurement and Electronics**

No. of ECTS: **6**

Aim:

Familiarize students with problems of modern electrical engineering and electronics in conjunction with the physical phenomena and emphasizing its compounds and applications in computer science.

Course content:

- Basic concepts of electrical engineering. Constant current circuits. Resistance guides. Ohm's law and Kirchhoff's laws,
- Passive and active elements of electrical circuit and methods of connecting them,
- Energy and power of electric current. Joule's law,
- Classic method of electrical circuits analysis,
- Magnetism and electromagnetism. Magnetic induction. Movement law. Ohm's law and Kirchhoff's law for magnetic circuits,
- Electromagnetic induction,
- Electrical signals. The mean value and RMS current and voltage,
- Electrical circuits of single-phase sinusoidal alternating current,
- Power and work in AC circuits. Phenomenon of resonance,
- Analysis of sinusoidal alternating current circuits,
- DC and AC machines,
- Fundamentals of electric drive,
- Elements of electronic systems - diodes, transistors, thyristors and integrated circuits as well as optoelectronic components,
- Selected electronic systems of measurement and driving ,
- Elements of microprocessor technology.

Skills:

Student is able to analyze DC and AC single-phase, analyze selected magnetic currents, describe selected components and electronic current, formulate and use fundamental rights applicable in electrical engineering, correctly combining electrical and electronic circuits, perform electric measurements with analog and digital gauges.

Form of teaching:

Lectures, labs.