National Technical University
“Kharkiv Polytechnic Institute”

Department of
“Industrial and Biomedical Electronics”

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Department “Industrial and Biomedical electronics” of NTU "KhPI"

Yevgen Sokol - Ukrainian scientist, rector of the National Technical University "Kharkiv Polytechnic Institute", corresponding member of National Academy of Sciences (2012), winner of the Prize. SA Lebedev's National Academy of Sciences of Ukraine, Professor, Doctor of Technical Sciences, Head of the department “Industrial and biomedical electronics”.
We train specialists in the field:

Speciality 171 – «Electronics»
Specialization 171.01 – «Industrial Electronics»

Speciality 171 – «Electronics»
Specialization 171.02 – «Biomedical Electronics»
General academic disciplines

Speciality 171 – «Electronics»
Specialization 171.01 – «Industrial Electronics»

- Programming;
- Programming Embedded Systems;
- Software microcontroller systems;
- Computer-aided design;

- Theory of electrical and electronic circuits;
- Analog circuitry;
- Digital circuitry;
- Microprocessor technology.
General academic disciplines

Speciality 171 – «Electronics»
Specialization 171.01 – «Industrial Electronics»

- Information display systems;
- Signal transducers and interfaces;
- Computer-aided design of electronic devices;
- Information theory and coding;
- Microcontrollers in applications of information technology;
- Digital signal processing;
- Power electronics;
- Power semiconductors.
General academic disciplines

Speciality 171 – «Electronics»
Specialization 171.01 – «Industrial Electronics»

- Power supplies;
- Electrical machinery and apparatus;
- Stand-alone converters;
- Microcontrollers in power electronics devices;
- Converters for electric drive.
General academic disciplines

Speciality 171 – «Electronics»
Specialization 171.01 – «Biomedical Electronics»

- Programming;
- Programming embedded medical electronic engineering systems;
- Analog electronics;
- Digital circuits;
- Microprocessor technology;
- Display means information.
General academic disciplines

Speciality 171 – «Electronics»
Specialization 171.01 – «Biomedical Electronics»

- Digital signal processing;
- Computer-aided design;
- Computer-aided design of electronic medical devices;
- Theory of automatic control;
- Information devices of medical electronics;
- Sources of supply of medical equipment;
- Physiotherapy apparatus;
- Biometrics;
- IEDs medical information processing;
- Medical diagnostics.
Scientific activities of the department

- Using the separated commutation in two-stage dc/dc converter in order to reduce of the power semiconductor switches’ dynamic losses.
- About possibility of improvement of energetic characteristics of two-stage DC/DC converter with separated commutation.
- Energy-Efficient High-Voltage Switch Based on Parallel Connection of IGBT and IGCT.
- Perspectives of Improvement of AC Power Transmission Based on Achievements of Modern Power Electronics.
- Rectifiers with a combined filtration of primary current for high-frequency power systems.
- A Novel Multipulse Rectifier with Electronic Phase Shifting.
- Ratio non-sinusoidal voltage at the connection point of the active rectifier.
- Increased capacity AC power by changing sinusoidal signals with limited range meanders.
- etc.
Scientific activities of the department

- Research models of non-stationary random spectral biopotential signals occurring in biochemical objects under the influence of a regulated dynamic factor levels.
- Creating a biomechanical metering equipment and metrology software for dynamically adjusting the factors of mechanical loads on biological samples.
- Mobile system of telemedicine diagnostics and control of biomedical parameters of biological objects.
- Digital portable spirometer with turbocharged sensor.
- Identification and researching of the conversion function of turbine gas meters.
- Holographic system for determining the state of the plasmatic membrane of red blood cells.
- Device for the integrated evaluation of the antioxidant activity of food products.
- The development of the ozone generator and the improvement of its functional units.
Our contacts:
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