



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:

POWER 
ELECTRONICS

*Speciality 171 – «**Electronics**»*

*Specialization 171.01 – «**Industrial Electronics**»*

*Speciality 171 – «**Electronics**»*

*Specialization 171.02 – «**Biomedical Electronics**»*

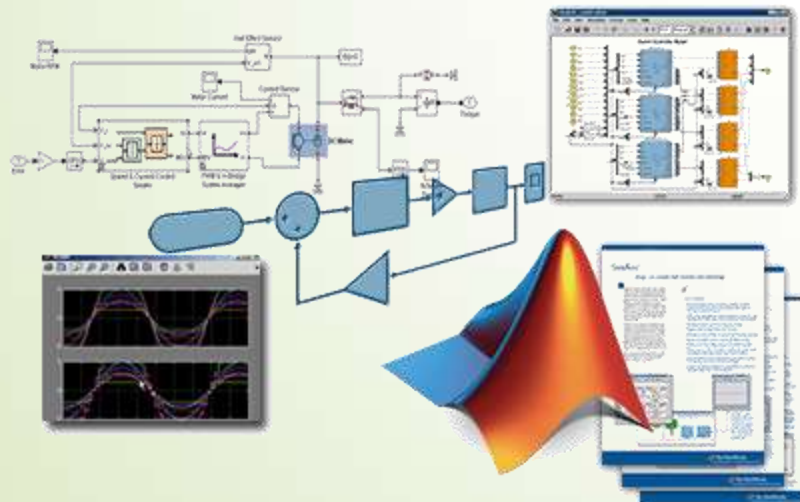


General academic disciplines

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;**



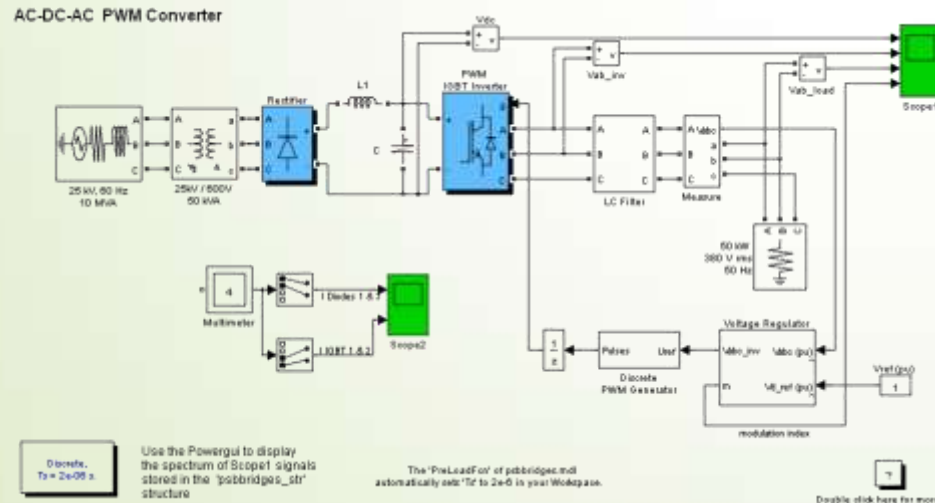
- **Microcontrollers in applications of information technology;**
- **Digital signal processing;**
- **Power electronics;**
- **Power semiconductors.**

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.**



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